

# TRANSCRIPT OF RECORD

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**SUPREME COURT OF THE UNITED STATES.**

**OCTOBER TERM, 1918.**

**No. 664.**

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**THE HEBE COMPANY AND CARNATION MILK PRODUCTS  
COMPANY, APPELLANTS,**

**vs.**

**NORMAN E. SHAW, SECRETARY OF AGRICULTURE OF  
OHIO, AND THOMAS C. GAULT, CHIEF OF BUREAU OF  
DAIRY AND FOODS OF THE BOARD OF AGRICULTURE  
OF OHIO.**

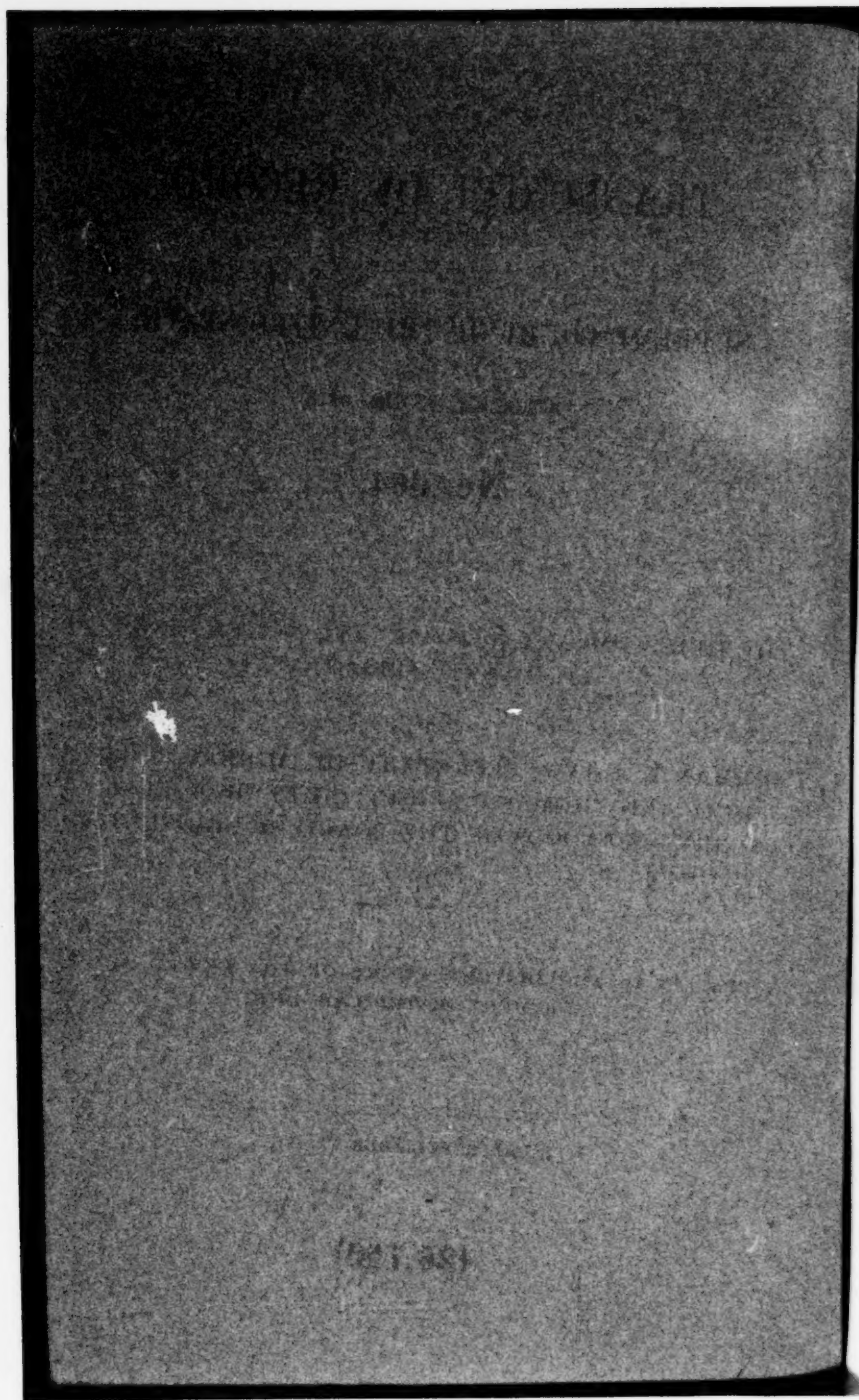
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**APPEAL FROM THE DISTRICT COURT OF THE UNITED STATES,  
SOUTHERN DISTRICT OF OHIO.**

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**FILED SEPTEMBER 17, 1918.**

**(26,750)**



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INDEX.

	Page
Bill of complaint.....	1
Answer .....	18
Waiver of plaintiffs and stipulations of all parties.....	27
Judgment .....	29
Petition for appeal.....	30
Assignment of errors.....	30
Order allowing appeal.....	34
Citation and service.....	34
Bond on appeal.....	35
Opinion .....	36
Stipulation and preceipe for record.....	46
Statement of evidence and certificate of appeal.....	47

	Original. Print
Stipulation of facts.....	49
Testimony of Clarence S. Stevens.....	52
Howard Beatty .....	56
Dr. E. J. Wilson.....	58
L. A. Scarbrough.....	63
Charles F. Healy.....	64
John A. Wesener.....	66
Exhibit 14—Paper showing analysis of "Hebe" and Carnation milk.....	67
15—Paper showing colored illustrations.....	68
Testimony of Curtis C. Howard.....	75
Charles F. Healy (recalled).....	77
Exhibit 16—Letter of Attorney General to Dr. C. L. Alsberg, dated July 21, 1916.....	78
17—Letter of W. P. Jones to Attorney General, dated August 2, 1917.....	79
Testimony of Arthur W. Reynolds.....	79
Edwin James .....	81
John L. Hutchinson.....	82
John F. Lyman.....	92
Dr. E. V. McCollum.....	98
Exhibit B—Article published in Hoard's Dairyman, entitled "The Present Situation in Nutrition".....	104
C—Paper entitled "The Distribution in Plants of the Fat Soluble A, the Dietary Essential of Butter Fat" .....	111
Testimony of Arthur G. Helmick.....	121
Oscar Erf .....	122
Exhibit D—Copy of F. L. D. 158, issued April 2, 1915, by the U. S. Department of Agriculture.....	125
Testimony of L. P. Bailey.....	126
Dr. John A. Wesener.....	127
Exhibit 6—Hebe label .....	129
7—Bulletin No. 505 of the U. S. Department of Agriculture..	130
8—Monthly bulletin of the Ohio Agricultural Experiment Station, Vol. 1, December, 1916.....	135
9—Bulletin No. 469 of the U. S. Department of Agriculture..	142
Stipulation as to exhibits.....	149
Judge's certificate to statement of evidence.....	150
Clerk's certificate .....	151
Citation and service.....	152

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## **BILL OF COMPLAINT**—Filed July 18, 1918.

The Hebe Company, a corporation duly organized and existing under the laws of the State of Washington, and a citizen and resident of the State of Washington, and having its principal place of business in the City of Seattle, in the said state, and Carnation Milk Products Company, a corporation duly organized and existing under the laws of the State of Maine, and a citizen and resident of the said State of Maine, and having its principal office in said state, and having numerous principal places of business throughout the United States outside of the State of Ohio, brings this their bill of complaint against the defendants, Norman E. Shaw, Secretary of Agriculture of Ohio, Thomas C. Gault, Chief of Bureau of Dairy and Foods of the Board of Agriculture of Ohio, and other officers and agents claiming to act under the authority of the said The Board of Agriculture of Ohio, or of the Secretary of Agriculture of Ohio, all of which defendants are citizens and residents of the said State of Ohio.

And thereupon plaintiffs complain and say:

1. Plaintiffs respectfully represent unto the court that they are engaged in manufacturing, shipping, transporting, selling and offering for sale, throughout the United States, and in the several states, including the State of Ohio, and in interstate commerce, a certain food product hereinafter described, the business of said Hebe Company being that of distribution of said product.

2. Plaintiffs solicit and take orders for said food product from customers in the State of Ohio and fill said orders by shipping said food product from their places of business in the United States outside of the State of Ohio to said customers in the State of Ohio.

3. The business of plaintiffs in said food product with customers in the State of Ohio is with wholesale dealers, jobbers and distributors residing in and doing business in the State of Ohio; and plaintiffs sell said food product to said wholesale dealers, jobbers and distributors and ship said product to them as aforesaid; said wholesale dealers, jobbers and distributors sell said product in said State of Ohio to retail dealers and others in said State of Ohio; and said retail dealers sell, offer for sale, expose for sale, and have in their possession with intent

to sell the said food product to consumers in the State of Ohio.

4. Said food product is sold by said wholesale dealers, jobbers, distributors and retail dealers in many of the principal cities, towns and villages of the said State of Ohio.

5. Plaintiffs aver that the amount involved in this controversy exceeds, exclusive of interest and costs, the sum of three thousand dollars; and that the value of the business, which plaintiffs seek to protect by this suit exceeds the sum of three thousand dollars, exclusive of interest and costs.

6. Plaintiffs' business with said customers as aforesaid in the State of Ohio, before the committing of the grievances hereinafter mentioned, resulted in fair and continuous profit, and has been built up by the expenditure of large sums of money in promoting said business.

7. Said food product shipped as aforesaid into the State of Ohio, and therein dealt in, handled and sold, as aforesaid by wholesale dealers, jobbers, distributors and retailers, is pure and wholesome and is not injurious or deleterious to health; it is composed of evaporated skimmed milk and a vegetable fat, to wit: cocoanut oil which has been highly refined and of the finest quality, and both of these ingredients are pure, wholesome and nutritious; the amount of said cocoanut oil in said product is six per cent. (6%), which is a substantial amount of fat in such a food product, and adds materially to the food value and usefulness of said food product, the balance of said product being evaporated skimmed milk; said evaporated skimmed milk and said vegetable fat are combined into a homogeneous mass as a result of a special process known to plaintiffs whereby said vegetable fat is caused to combine with said evaporated skimmed milk in such a way that said fat remains properly combined with said evaporated skimmed milk until said food product is ready for consumption, and said food product contains no other ingredients than as hereinabove stated; and when shipped into the State of Ohio and when handled, dealt in and sold by said wholesale dealers, jobbers, distributors and retail dealers in the State of Ohio, the said food product is at all times labeled as follows:

Net Contents 1 lb. Avoirdupois	Patent Applied For	Net Contents 1 lb. Avoirdupois	Patent Applied For
Hebe		Hebe	
A Compound of		A Compound of	
Evaporated Skimmed Milk		Evaporated Skimmed Milk	
and Vegetable Fat		and Vegetable Fat	
Contains 6% Vegetable Fat,		Contains 6% Vegetable Fat,	
24% Total Solids.		24% Total Solids.	
Manufactured at Jefferson, Wis.		Manufactured at Jefferson, Wis.	
The Hebe Company		The Hebe Company	
General Offices: Seattle, Wash.		General Offices: Seattle, Wash.	
	For Coffee and Cereals and For Baking and Cooking		For Coffee and Cereals and For Baking and Cooking
	Tall Size 48 Cans per Case		Tall Size 48 Cans per Case

When the said food product is shipped into the State of Ohio it is contained in tin cans of two sizes, one holding one pound of said product and the other holding six ounces; and each can bears the label aforesaid and no other label of any description; said cans labeled as aforesaid when shipped into the State of Ohio are packed in fibre shipping boxes or shipping cases, completely sealed, and completely concealing said cans and the labeling thereon, each case of one-pound cans containing 48 cans and each case of six-ounce cans containing 96 cans, which said shipping cases are used only as outer coverings for convenience in shipping and not as packages for the purpose of complete labeling, and when shipped in less-than-carload lots are marked only with the name of the consignee and such other data as necessary to insure proper identification of the product and delivery of the shipment, but when shipped in carload lots such cases are not marked with the name of the consignee. When said shipping cases are received by a retail dealer in the State of Ohio, the individual cans, labeled with the label hereinabove set out, are removed from said shipping cases, by such retail dealer and exposed for sale on the shelves of said retail dealer as individual units, and in the great majority of instances are purchased by consumers, one can at a time.

9. There are now in force and effect in the State of Ohio certain state laws dealing with the subject of foods and drinks, all of which laws were in full force and effect on and prior to June 1, 1915, and among such laws are found the following quoted sections of the General Code of Ohio:

“Section 5778. Food, drink, confectionery or condiments are adulterated within the meaning of this chapter (1) if any substance or substances have been mixed with it, so far as to lower or depreciate or injuriously affect its quality, strength or purity; (2) if any inferior or cheaper substance or substances have been substituted wholly, or in part, for it; (3) if any valuable or necessary constituent or ingredient has been wholly, or in part, abstracted from it; (4) if it is an imitation of, or is sold under the name of another article; (5) if it consists wholly, or in part, of a diseased, decomposed, putrid, infected, tainted or rotten animal or vegetable substance or article, whether manufactured or not, or, in the case of milk, if it is the product of a diseased animal; (6) if it is colored, coated, polished or powdered, whereby damage or inferiority is concealed,

or if by any means it is made to appear better or of greater value than it really is; (7) if it contains any added substance or ingredient which is poisonous or injurious to the health; (8) if, when sold under or by the name recognized in the eighth decennial revision of the United States pharmacopoeia, or the third edition of the National Formulary, it differs from the standard of strength, quality or purity laid down therein; (9) if, when sold under or by a name not recognized in the eighth decennial revision of the United States pharmacopoeia, or in the third edition of the National Formulary, but is found in some other pharmacopoeia, or other standard work on materia medica, it differs materially from the standard of strength, quality or purity laid down in such work; (10) if the strength, quality or purity falls below the professed standard under which it is sold; (11) if it contains any methyl or wood alcohol.

"Section 12716. In all prosecutions under this chapter, if milk is shown upon analysis to contain more than eighty-eight per cent. of watery fluid, or to contain less than twelve per cent. of solids or three per cent. of fats, it shall be deemed to be adulterated.

"Section 12717. Whoever sells, exchanges, or delivers, or has in his custody or possession with intent to sell or exchange, or expose or offers for sale or exchange, adulterated milk, or milk to which water or any foreign substance has been added, or milk from cows fed on wet distillery waste or starch waste, or from cows kept in a dairy or place which has been declared to be in unclean or unsanitary condition by certificate of any duly constituted board of health or duly qualified health officer within the county in which said dairy is located, or from diseased or sick cows, shall be fined not less than fifty dollars nor more than two hundred dollars; and, for a second offense, shall be fined not less than one hundred nor more than three hundred dollars, or imprisoned in the jail or workhouse not less than thirty days nor more than sixty days.

"Section 12718. For a subsequent offense, a person violating the next preceding section shall be fined fifty dollars and imprisoned in the jail or workhouse not less than sixty days nor more than ninety days.

"Section 12719. Whoever sells, exchanges, delivers or has in his custody or possession with intent

to sell or exchange, or exposes or offers for sale as pure milk, any milk from which the cream or part thereof has been removed, shall be fined not less than fifty dollars nor more than two hundred dollars. For a second offense he shall be fined not less than one hundred dollars nor more than three hundred dollars or imprisoned in the jail or workhouse not less than thirty days nor more than sixty days, and, for a subsequent offense, shall be fined fifty dollars and imprisoned in the jail or workhouse not less than sixty days nor more than ninety days.

“Section 12720. Whoever sells, exchanges, delivers or has in his custody or possession with intent to sell, exchange or deliver, milk from which the cream or part thereof has been removed, unless in a conspicuous place above the center and upon the outside of each vessel, can, or package, from which or in which such milk is sold, the words ‘skimmed milk’ are distinctly marked in uncondensed Gothic letters not less than one inch in length, shall be fined not less than fifty dollars nor more than two hundred dollars.

“Section 12721. For a second offense, a person violating the next preceding section shall be fined not less than one hundred dollars nor more than three hundred dollars or imprisoned in the jail or workhouse not less than thirty days nor more than sixty days, and, for a subsequent offense, shall be fined fifty dollars and so imprisoned not less than sixty days nor more than ninety days.

“Section 12725. Whoever manufactures, sells, exchanges, exposes or offers for sale or exchange, condensed milk unless it has been made from pure, clean, fresh, healthy, unadulterated and wholesome milk, from which the cream has not been removed and in which the proportion of milk solids shall be the equivalent of twelve per cent. of milk solids in crude milk, twenty-five per cent. of such solids being fat, and unless the package, can or vessel containing it is distinctly labeled, stamped or marked with its true name, brand, and by whom and under what name made, shall be fined not less than fifty dollars nor more than two hundred dollars, and, for each subsequent offense, shall be fined not less than one hundred dollars nor more than five hundred dollars and imprisoned not less than ten days nor more than ninety days.

“Section 12726. Whoever, with intent to de-

fraud, sells, delivers, or causes to be delivered, to a cheese or butter factory, milk which is adulterated or diluted within the meaning of the law, or from which any cream has been taken, or from which the part known as 'stripping' has been withheld, or keeps or renders a false account of the quantity or weight of milk furnished at or to a factory or sold to a manufacturer, shall be fined not less than fifty dollars nor more than two hundred dollars, and, for each subsequent offense, shall be fined not less than one hundred dollars nor more than five hundred dollars and imprisoned not less than ten days nor more than ninety days.

"Section 12727. Whoever sells, exchanges, or offers for sale or exchange, unclean, impure, unhealthy or unwholesome milk shall be fined not less than fifty dollars nor more than two hundred dollars, and for each subsequent offense shall be fined not less than one hundred dollars nor more than five hundred dollars and imprisoned not less than ten days nor more than ninety days.

"Section 12728. Whoever sells, exchanges, exposes, offers for sale or exchange, has in his possession or disposes of milk which is falsely branded, labeled, marked or represented as to grade, quantity or place where produced or procured shall be fined not less than fifty dollars nor more than two hundred dollars, and for each subsequent offense shall be fined not less than one hundred dollars nor more than five hundred dollars and imprisoned not less than ten days nor more than ninety days.

"Section 12729. Whoever keeps a cow for the production of milk in a cramped or unhealthy condition or feeds it on unhealthy food or on food which produces impure, unhealthy or unwholesome milk, shall be fined not less than fifty dollars nor more than two hundred dollars, and for each subsequent offense shall be fined not less than one hundred dollars nor more than five hundred dollars and imprisoned not less than ten days nor more than ninety days.

"Section 12722. Whoever uses a standard measure of milk or cream other than that which is defined in this section, where milk or cream is purchased by or furnished to creameries or cheese factories and where the value of such milk or cream is determined by the per cent. of butter fat contained therein by the Babcock test, shall be fined not less

than twenty-five dollars nor more than one hundred dollars. In the use of the Babcock test the standard milk measures or pipettes shall have a capacity of 17.6 cubic centimeters and the standard test tubes or bottles for milk shall have a capacity of two cubic centimeters for each ten per cent. marked on the necks thereof. The standard unit of cream for testing shall be eighteen grams.

"Section 12723. Whoever offers for sale or sells a milk pipette or measure, test tube or bottle which is not correctly marked or graduated as provided in the next preceding section, shall be fined not less than twenty-five dollars nor more than one hundred dollars.

"Section 12724. Whoever, at a cheese factory, creamery, condensed milk factory, or other place where milk is tested for quality or value, manipulates, underreads or overreads the Babcock test or any other contrivance used for determining the quality or value of milk or cream, or makes a false determination by the Babcock test or otherwise, shall be fined not less than twenty-five dollars nor more than one hundred dollars.

"Section 12730. Whoever fills or refills with milk, cream or other milk product a glass jar or bottle, with intent to sell such milk, cream or other milk product, unless such glass jar or bottle is first thoroughly cleansed or sterilized, shall be fined not more than one hundred dollars.

"Section 13169. Whoever fills or refills with milk, cream or other milk product, a glass jar or bottle having the name of a person, firm or corporation blown therein, with intent to sell such milk, cream or other product, shall be fined not more than one hundred dollars. This section shall not apply to a person, firm or corporation whose name is blown in such glass jar or bottle or an authorized agent or employe thereof."

10. The defendant, Norman E. Shaw, is the duly appointed, qualified and acting Secretary of Agriculture of Ohio and the defendant, Thomas C. Gault, is Chief of Bureau of Dairy and Foods of the Board of Agriculture of Ohio, and the other defendants, whose names are unknown to plaintiffs, are officers, agents or employes of said Bureau and Board.

Said defendants and each of them are charged with the enforcement of the Dairy, Food and Drink laws of

the State of Ohio including the sections of the General Code of Ohio hereinabove set forth.

11. On or about the 4th day of June, 1915, the Hebe Company submitted to the Agricultural Commission of Ohio, then charged by law with the duty of enforcing the laws of said state dealing with the subject of food and drinks hereinabove set out, the question as to the legality of the sale of said food product within the State of Ohio, and S. E. Strode, the then duly appointed, qualified and acting member of the Agricultural Commission of Ohio, to whom said Commission had allotted the investigation, inquiry, hearing, decision and order on questions in the division of dairy and food, duly approved the same, and said Agricultural Commission then and there caused to be sent by its duly authorized agent, a letter confirming said approval, a copy of said letter is in the words and figures following, to wit:

“June 5, 1915.

Mr. Hubert B. Fuller,  
1110 Williamson Bldg.,  
Cleveland, Ohio.

Dear Mr. Fuller: Yours of June 4th, stating your understanding of the verbal agreement made between Mr. Stevens of the Hebe Co. and this department, received.

I wish to say that your statement is entirely in accord with my understanding. The Hebe Company agrees to change its labels to conform to the rulings and regulations of the national and Ohio pure food departments. Copy of label is to be submitted and approved by this department. The company further agrees not to ship any goods into the state until these labels have been approved.

The department agrees to permit the sale of all Hebe products bearing the old label which was shipped into the state prior to May 1, 1915, and distributed by the Monypeny-Hammond Co., Columbus, Ohio; The Dall-Milliken Grocery Co., Washington, C. H., and The Weakly-Worman Co., Dayton, Ohio.

Very respectfully,

S. E. Strode,  
Commissioner in Charge.”

Said letter was sent in response to a letter of inquiry submitted to said official on behalf of The Hebe Company, a copy of which letter is in the words and figures following, to wit:

"Cleveland, Ohio, June 4, 1915.

Hon. S. E. Strode,  
State Dairy and Food Commission,  
Columbus, Ohio.

My Dear Mr. Strode: Mr. Stevens, of The Hebe Company, and I were very much pleased with the result of our conference with you and Mr. Bartlow yesterday.

In line with my suggestion I am writing this letter to you in order that there may be no possible room for misunderstanding as to just what agreement was reached.

First of all, for The Hebe Company we agree that we will not ship into Ohio any more of our products known as 'Hebe' except that which bears the label approved yesterday by you and Mr. Bartlow. As soon as we can secure them from the lithographers, we will send you two copies of this label; one to be retained for your files and the other to be stamped and returned to us.

On the other hand, your office, as we understand it, agrees to permit the sale of all Hebe bearing the old label now in the State of Ohio, which was shipped to May 1st last. We do not know what the exact amount is, but it is not large, because we have in this state only three distributing houses. These houses are The Monypeny-Dummond Company of Columbus; The Dall-Milliken Grocery Company of Washington Court House, and The Weakly-Worman Company, of Dayton.

Will you kindly acknowledge receipt of this letter and confirm the correctness of this statement of the situation?

Very truly yours,

(Signed) Hubert B. Fuller."

Thereafter, on the 29th day of June, 1915, said Agricultural Commission of Ohio caused to be sent to The Hebe Company, a letter approving the labels used by the Hebe Company, a copy of which letter is in the words and figures following, to wit:

"June 29, 1915.

The Hebe Company, Chicago, Illinois.

Gentlemen: Replying to your communication of recent date, we wish to advise that we have received the labels and the same are approved, however, we request that you send a duplicate of the labels in order that we may include on same the approval of the department. One to be filed in this de-

partment, and the other to be returned to you.

Trusting to hear from you soon, and with best wishes, I am,

Yours very truly,

Bert Bartlow,

Chief of Division."

12. Replying implicitly upon said action by said officials of the State of Ohio, duly authorized by law to act in respect thereto, affirming and acknowledging the legality of the sale of said food product "Hebe" in the State of Ohio, and pursuant to said official action and decision, plaintiffs have made every effort to enlarge their business in the State of Ohio and have incurred large expense and by every other means have sought to build up, and have built up, a large and profitable business in the said food product "Hebe" in the State of Ohio, and it would be against equity and good conscience to now deprive plaintiffs of said business so built up in reliance upon the ruling and attitude taken by said officials as aforesaid.

13. Plaintiffs say that the Attorney General of the State of Ohio rendered an opinion to Thomas L. Calvert, the predecessor in office of the defendant, Thomas C. Gault, to the effect that said food product "Hebe" cannot be lawfully sold or distributed in the State of Ohio under any label whatever and that its sale is absolutely prohibited.

14. The defendants, Norman E. Shaw, as Secretary of Agriculture of Ohio, and Thomas C. Gault, as Chief of Bureau of Dairy and Foods of the Board of Agriculture of Ohio, have served notice upon plaintiffs and their customers in the State of Ohio that the said product "Hebe" cannot be sold or distributed in the State of Ohio from and after the 9th day of July, 1918; that if after that date said product be found upon the market, said defendants will cause prosecutions to be brought against all wholesalers, jobbers, distributors and retailers selling, offering or exposing for sale the said product known as "Hebe" in the State of Ohio.

15. Plaintiffs are advised that the said Attorney General based his said opinion principally upon the provisions of said Section 12725 of the General Code of Ohio, but plaintiffs are advised and aver that the construction placed upon the said Section 12725 of the General Code of Ohio by the Attorney General, as aforesaid, is not the correct construction; said section, properly construed, does not prohibit the sale of a product composed in part of evaporated skimmed milk, if said prod-

uct is plainly and fairly labeled in a conspicuous manner so as to apprise the purchaser of the true composition of such product; the label upon the said product "Hebe" hereinabove referred to fairly and conspicuously discloses to the purchaser that said product "Hebe" is in fact a compound, composed of evaporated skimmed milk and vegetable fat; said product so labeled is not within the condemnation of any valid act of the Legislature of the State of Ohio and may be lawfully sold and offered for sale in said State of Ohio.

16. Said food product "Hebe" is an article of food within the meaning of the National Food Law passed by the Congress of the United States and approved June 30, 1906, officially known as "The Food and Drugs Act, June 30, 1906." (34th Statutes at Large, page 768); it does not contain any added poisonous or deleterious ingredients; it is labeled so as to plainly indicate that it is a compound and the word "compound" is plainly stated on the package in which it is offered for sale; and it complies fully with the second paragraph of the first proviso contained in Section 8 of the said National Food and Drug Act of June 30, 1906, and is not and should not be deemed to be adulterated or misbranded within the meaning of said National Food and Drug Acts of June 30, 1906. Plaintiffs are advised that the said Attorney General on the 21st day of July, 1916, wrote a letter to the officials of the United States Bureau of Chemistry of the U. S. Department of Agriculture, charged with the enforcement of the said National Food Law, asking said officials for their opinion with regard to said food product "Hebe," the details of which letter are unknown to plaintiffs, but plaintiffs are advised that the following is a true and correct copy of an opinion rendered by the officials of said bureau to said Attorney General with regard to said food product "Hebe":

"F-221.

August 2, 1916.

Hon. Edward C. Turner, Attorney General, Columbus, Ohio.

Sir: Replying to your letter of July 21, 1916, there is enclosed a copy of Food Inspection Decision 158, containing a definition adopted by the department for condensed milk, evaporated milk, or concentrated milk. Articles which do not conform to the definition are regarded as not being entitled to be designated as condensed milk, evaporated milk, or concentrated milk.

The Bureau is informed that Hebe is a mixture of evaporated skimmed milk and cocoanut fat. It

is considered to be a compound within the meaning of Section 8 of the Food and Drugs Act, in the case of food, second subdivision of paragraph fourth, which provides that an article of food which does not contain any added poisonous or deleterious ingredients shall not be deemed to be adulterated or misbranded.

In the case of articles labeled, branded or tagged so as to plainly indicate that they are compounds, imitations, or blends, and the word 'compound,' 'imitation,' or 'blend,' as the case may be, is plainly stated on the package in which is offered for sale:

\* \* \*

Respectfully,

(Signed) W. P. Jones,

Assistant Chief."

17. There is nothing contained in any statute of the said State of Ohio which would require any labeling of the said product "Hebe" other or different than the labeling for such product required by the said National Food and Drugs Act of June 30, 1906; the said labeling of said product required under the provisions of said Section 8 of said National Food and Drugs Act of June 30, 1906, is in compliance with any labeling required by the provisions of the existing laws of the State of Ohio; to require any other labeling on said food product "Hebe" than that which is provided for in Section 8 of the said National Food and Drugs Act of June 30, 1906, would be an interference with the labeling provided for and required by said National Food and Drugs Act of June 30, 1906, and would be destructive of said labeling so required by said National Food Law and would place a burden upon the interstate commerce business of plaintiffs without serving any good purpose or bringing about any different labeling required by any statute of the State of Ohio.

18. The said product "Hebe" is not sold by plaintiffs to customers in Ohio or to any customers in any of the states as or for condensed milk or evaporated milk, but is sold under its distinctive name of "Hebe" and under the label hereinbefore set forth; and plaintiffs are informed and believe and therefore aver that the said "Hebe" is not sold by any of their jobbers or wholesale dealers in the State of Ohio or elsewhere as or for condensed milk or evaporated milk, but is sold by said jobbers and wholesale dealers under its own distinctive name of "Hebe" and under the label hereinbefore set forth.

19. If said Section 12725 or any of the other sections of the Ohio General Code shall be construed by this Honorable Court as absolutely prohibiting the sale of a compound of evaporated skimmed milk and vegetable fat, notwithstanding that such compound is pure, wholesome and nutritious as an article of human food and is plainly labeled to show its true nature, then said laws of Ohio, and each and all of them as so construed, are unconstitutional and void for the following reasons:

(a) Because in violation of the 14th Amendment of the Constitution of the United States;

(b) Because they deprive plaintiffs of liberty and property without due process of law and deny to plaintiffs the equal protection of the law. The protection of the provisions of said 14th Amendment of the Constitution of the United States is hereby especially invoked by plaintiffs;

(c) Because such laws would arbitrarily and unjustly discriminate against said "Hebe" by prohibiting the distribution and sale thereof under a conspicuous label which shows the true character of such product, said prohibition being based upon the ground that said "Hebe" is composed in part of condensed or evaporated skimmed milk; while at the same time said Ohio laws permit the sale without restriction of uncondensed or unevaporated skimmed milk if the same be labeled "skimmed milk," as specified by said law. And plaintiffs aver that the process of evaporating skimmed milk consists in simply driving off a certain amount of moisture and neither adds any new element nor removes any element except a certain amount of the moisture as aforesaid;

(d) Because said laws, if so construed, would absolutely prohibit the sale in the State of Ohio of said food product "Hebe," which is a nutritious food product sold under a label correctly describing said product, and would amount to absolute prohibition and not a mere regulation of the sale thereof;

(e) Because plaintiffs in shipping the said product into the State of Ohio, as hereinbefore particularly described, are under the protection of the interstate commerce laws of the United States; that there is now and was at all times herein mentioned a valid national law governing the shipment of food and drug products in interstate shipment; that under said national law the said product "Hebe," labeled as aforesaid, may be lawfully shipped into said State of Ohio, and is in nowise in violation of said national law; that a statute of the State of

Ohio which denies to plaintiffs and their customers and dealers in Ohio the right to sell the product "Hebe" in the original cans in which plaintiffs ship the said product into the State of Ohio from outside the State of Ohio, is an unlawful interference with the interstate commerce laws of the United States since the individual tin cans hereinbefore described are the original packages so far as the National Food and Drug Laws is concerned and said cans are labeled as required by the National Food and Drugs Law aforesaid; any statute of Ohio which denies the right to sell said product in said cans is unconstitutional and void as being in conflict with the said national law and national regulations duly and regularly made thereunder;

(f) Because the said sections of the General Code of Ohio as so construed by said Attorney General are void because the same are unjust, arbitrary and unduly discriminating and confiscatory and violate the Constitution of the United States, the Fourteenth Amendment thereto and the Commerce Clause thereof.

20. The defendants claiming to act under the laws of the State of Ohio hereinabove set forth forbidding fraud, adulterations or impurities in food, drinks or drugs, and the unlawful labeling thereof and especially under the provisions of said Section 12725 of the General Code of Ohio, but without any authority of law, and notwithstanding the fact that the sale of said food product known as "Hebe" and labeled as aforesaid is not forbidden by said statutes or any of them, and contains all labeling required by said statutes and that the said statutes are not applicable in the premises, and that there is no law in the State of Ohio warranting their said acts, and notwithstanding the pure, wholesome and nutritious character of said "Hebe" and that the same is without any unwholesome or deleterious ingredients, and notwithstanding that each can is labeled as specifically required to be labeled by the National Food and Drugs Act of June 30, 1906, and that said food product is a legitimate article of commerce under the provisions of said national law and notwithstanding the interstate commerce rights of plaintiffs to ship said product into the State of Ohio and the rights of its customers and dealers in the said State of Ohio to sell, offer for sale and expose for sale the said article of food in the individual cans labeled as required by said national law, and notwithstanding the approval of said food product by their predecessors in office duly authorized in the premises will, unless restrained by the order of this Honorable

Court, arrest, cause to be arrested and prosecute or assist in arresting and prosecuting each and all of the customers of plaintiffs who may sell, exchange, expose or offer for sale or exchange said food product manufactured by plaintiffs known as "Hebe," and will institute a large number of prosecutions upon the wrongful and erroneous charge that the sale of said "Hebe" is forbidden by law, and will further interfere with and destroy the business of said plaintiffs within said state. By reason of the official capacity of the defendants and the fact that they claim to act under said statutes of the State of Ohio intended to prevent the adulteration of food products, the wrongful acts above described, which said defendants will commit unless restrained by the order of this Honorable Court, will render said food product unmarketable in Ohio and will impair and destroy the market value of large quantities of "Hebe" now on hand among plaintiff's customers and dealers in Ohio, and will, to a large extent, injure plaintiffs and their said interstate commerce business and the good will thereof and will injure, if not wholly destroy, the value of the same, and plaintiffs will be put to great expense in defending their said interstate commerce rights in Ohio and will suffer irreparable injury thereby.

21. By reason of the fact that many of the customers of plaintiffs and the said retail dealers selling plaintiff's product aforesaid, are within the jurisdiction of the courts of the said State of Ohio and will be prosecuted by said defendants if they sell said food product, many of said customers of plaintiffs and the said wholesalers, jobbers, distributors and retail dealers have been and are intimidated and afraid to continue to sell and handle the said food product "Hebe" lest they subject themselves to prosecutions; and that by reason thereof plaintiffs' said business with customers in the said State of Ohio has been and will be diminished to the great damage and loss of plaintiffs; that should said prosecutions be instituted the said business of plaintiffs in said food product will be wholly destroyed in said State of Ohio, to the irreparable damage of plaintiffs in the sum of many thousands of dollars.

22. Should said prosecutions be commenced, the same would result in a multiplicity of suits, and said food product "Hebe" would be involved in all of said suits, but plaintiffs would not be parties to any of said suits or have a legal right to defend same or defend said food product and establish its legality, and in said prosecutions no defense can be made properly representing the

interest of plaintiffs, and even though such prosecutions shall uniformly result in the acquittal of the persons charged, yet by reason of the multiplicity thereof, said prosecutions will deter many, if not all, dealers from further dealings in said "Hebe"; the number of dealers in "Hebe" in the State of Ohio against whom such wrongful prosecutions might be brought exceeds three hundred in number.

23. The said threatened prosecutions, if not restrained by injunction issuing out of your Honorable Court will result in continuing wrong and damage to plaintiffs which cannot be compensated for in an action at law for damages. Plaintiffs have no legal or adequate remedy at law by which they can prevent the commission of said acts complained of, and are without any remedy whatsoever other than the writ of injunction hereinafter prayed for.

24. Forasmuch, therefore, as plaintiffs are without remedy in the premises except in a court of equity, plaintiffs pray:

1st. That this Honorable Court determine the rights of these plaintiffs under the Constitution and laws of the United States regulating interstate commerce in articles of food, as well as the rights of these plaintiffs under the laws of the State of Ohio; and

2nd. That the defendants and each of them, their agents and attorneys, be restrained by an injunction issued out of this Honorable Court, from bringing or causing to be brought any prosecutions against plaintiffs or any customers of plaintiffs or any dealers in said food product "Hebe," charging them or either of them with the possession of, offering for sale, or selling of said food product "Hebe," and from menacing or threatening any dealer in "Hebe" or any customer of plaintiffs with prosecution for having in his possession, offering for sale or selling such "Hebe," or instituting or commencing against any person, partnership or corporation having in his, their or its possession, or offering for sale or selling "Hebe," any action, proceeding, suit or prosecution based upon the claim that said "Hebe" is forbidden by law to be sold or offered for sale within the State of Ohio;

3rd. That temporarily and pending this suit, said defendants and each of them, their agents and attorneys, may be temporarily enjoined as above prayed for.

May it please your Honors to grant plaintiffs writs of subpoena directed to said defendant, Norman E. Shaw, Secretary of Agriculture of Ohio, and the defendant,

Thomas C. Gault, Chief of Bureau of Dairy and Foods of the Board of Agriculture of Ohio, thereby commanding them, and each of them under a certain penalty therein to be named, to be and appear before this Honorable Court and then and there full, true, direct and perfect answer make to this bill of complaint (but not under oath, answer under oath being hereby waived), then and there to abide by and perform the orders and decrees of this court in the premises.

The Hebe Company,  
By Lewis R. Hardenbergh,  
Vice President.  
Carnation Milk Products Company,  
By Lewis R. Hardenbergh,  
Vice President.  
Vorys, Sater, Seymour & Pease,  
Brode B. Davis,  
Lannen & Hickey,  
Solicitors for Plaintiffs.

Augustus T. Seymour,  
Brode B. Davis,  
Thomas E. Lannen,  
Of Counsel.

State of Illinois, County of Cook, ss.:

Lewis R. Hardenbergh, being first duly sworn, deposes and says that he is the vice president of The Hebe Company and vice president of the Carnation Milk Products Company, corporations, respectively, the plaintiffs in the above entitled bill of complaint; that he is authorized to sign this bill of complaint on behalf of said plaintiffs and each of them; that he has read the foregoing bill of complaint and knows the contents thereof, and that the same is true of his own knowledge, except as to such matters therein stated to be upon information and belief he believes them to be true.

Lewis R. Hardenbergh.

Subscribed and sworn to before me this fifteenth day of July, A. D. 1918.

[Notarial Seal.]

W. M. Ellamund,  
Notary Public.

### **ANSWER TO THE BILL OF COMPLAINT**—Filed July 18, 1918.

Now come defendants, Norman E. Shaw, Secretary of Agriculture of Ohio, and Thomas C. Gault, Chief of Bureau of Dairy and Foods of the Board of Agriculture of Ohio, and by way of answer to the bill of complaint say that they are without knowledge that The Hebe

Company is a corporation duly organized and existing under the laws of the state of Washington and a citizen and resident of the state of Washington; that it has its principal place of business in the city of Seattle in the latter state; that the Carnation Milk Products Company is a corporation duly organized and existing under the laws of the state of Maine, and a citizen and resident of the state of Maine, that it has its principal office in said state or that it has numerous principal places of business throughout the United States outside of the State of Ohio, but these defendants admit that Norman E. Shaw, Secretary of Agriculture of Ohio, and Thomas C. Gault, Chief of Bureau of Dairy and Foods of the Board of Agriculture of Ohio, and all other officers and agents claiming to act under the authority of the said the Board of Agriculture of Ohio, are citizens and residents of the State of Ohio.

#### First Defense.

These defendants say that upon the face of said bill of complaint there is insufficiency of fact to constitute a valid cause of action in equity or to entitle the plaintiffs or either of them to the relief, or any part thereof, for which they pray in said bill of complaint.

#### Second Defense.

1. These defendants say that they are without knowledge that the plaintiffs are engaged in manufacturing, shipping, transporting, selling and offering for sale, throughout the United States, and in the several states, other than in Ohio, and in interstate commerce, a certain food product described in the bill of complaint and that the business of said The Hebe Company is that of distributing said product.

2. Defendants admit that plaintiffs solicit and take orders for said product from customers in the State of Ohio and fill said orders by shipping said product from their places of business in the United States, outside of the State of Ohio, to said customers in the State of Ohio.

3. Defendants admit that the business of plaintiffs in said product with customers in the State of Ohio is with wholesale dealers, jobbers and distributors residing in and doing business in the State of Ohio; that plaintiffs sell said product to said wholesale dealers, jobbers and distributors and ship said product to them as aforesaid; that said wholesale dealers, jobbers and distributors sell said product in said State of Ohio to retail dealers and others in said State of Ohio; that said retail dealers sell, offer for sale, expose for sale, and have in their possession with intent to sell the said prod-

uct to customers in the State of Ohio; but defendants have no knowledge that the business of plaintiffs is exclusively with wholesale dealers, jobbers and distributors.

4. Defendants admit that said product is sold by said wholesale dealers, jobbers, distributors and retail dealers in many of the principal cities, towns and villages of the said State of Ohio.

5. Defendants admit that the amount involved in this controversy exceeds, exclusive of interest and costs, the sum of three thousand dollars; and that the value of the business which plaintiffs seek to protect by this suit exceeds the sum of three thousand dollars, exclusive of interest and costs.

6. Defendants have no knowledge whether the business of plaintiffs with said customers as aforesaid in the State of Ohio, before the committing of the grievances hereinafter mentioned, resulted in fair and continuous profit, and has been built up by the expenditure of large sums of money in promoting said business, but defendants admit that the sale of an adulteration such as "Hebe" for a valuable food product such as butter fat should result in a large and continuous profit.

7. Defendants say that they have no knowledge whether said product is pure and wholesome and is not injurious to health, but defendants admit that if said product is not used to the exclusion of other food to sustain life, it is not injurious to health; defendants admit that said product is composed of evaporated skimmed milk and some kind of fat; defendants have no knowledge of the kind of fat in every case or whether or not said fat has been highly refined and is of the finest quality or of the percentage in every case of the fat in said product; defendants admit that six per cent. of butter fat is a substantial amount of fat in genuine condensed milk, but deny that six per cent. of a substitute fat or oil is a substantial amount of fat in said product; defendants deny that said substitute for butter fat, whatever the same may be, adds materially to the food value and usefulness of said product or to any condensed milk, but aver that the same increases the facility with which the public may be deceived into believing that it is buying genuine condensed milk; these defendants admit that all of said product, except the said substance which is substituted for butter fat, is evaporated skimmed milk. Defendants say that they have no knowledge that the evaporated skimmed milk and the vegetable fat in said product are combined into a homogeneous mass as a

result of a special process known to plaintiffs whereby said vegetable fat is caused to combine with said evaporated skimmed milk in such a way that said fat remains properly combined with said evaporated skimmed milk until said food product is ready for consumption; defendants have no knowledge that said product contains no other ingredients than evaporated skimmed milk and cocoanut oil; defendants admit that said product when shipped into the State of Ohio and when handled, dealt in and sold by said wholesale dealers, jobbers, distributors and dealers in the State of Ohio, is in some instances labeled as shown in paragraph 7 of the bill of complaint, but defendants aver that in other instances it is and has been sold under labels different from the label above mentioned and which contain misleading statements; that in some instances said labels contain different statements and statements which were calculated and intended by the plaintiffs to mislead the public.

8. Defendants admit that when the said product is shipped into the State of Ohio it is contained in tin cans of two sizes, one holding one pound and the other holding six ounces; but defendants deny that each can bears the label shown in paragraph 7 of the bill of complaint and no other label of any description; defendant admits that said cans, labeled as aforesaid, when shipped into the State of Ohio, are packed in fibre shipping boxes or shipping cases, completely sealed; defendants have no knowledge whether said shipping boxes or shipping cases completely conceal said cans and the labeling thereon, or whether each case of one pound cans contains forty-eight cans and each case of six ounce cans contains ninety-six cans; defendants have no knowledge that said shipping cases are used only as outer coverings for convenience in shipping and not as packages for the purpose of complete labeling and when shipped in less than carload lots are marked only with the name of the consignee and such other data as necessary to insure proper identification of the product and delivery of the shipment, or whether when shipped in carload lots said cases are not marked with the name of the consignee; defendants have no knowledge that when said shipping cases are received by a retail dealer in the State of Ohio the individual cans, labeled with the label mentioned in paragraph 7 of the bill of complaint, are removed from said shipping cases by such retail dealer and exposed for sale on the shelves of said retail dealer as individual units; defendants have no knowledge that in the great

majority of instances the cans are purchased by consumers, one can at a time.

9. Defendants admit that there are now in force and effect in the State of Ohio certain state laws dealing with the subject of foods and drinks; that all of said laws were in full force and effect on and prior to June 1, 1915, and that among said laws are found the quoted sections of the General Code of Ohio, described as Sections 5778, 12716, 12717, 12718, 12719, 12720, 12721, 12725, 12726, 12727, 12728, 12729, 12722, 12723, 12724, 12730 and 13169; that the said statutes as quoted in subdivision 9 of the bill of complaint are the statutes of Ohio, and defendants make this general admission for the purpose of avoiding unnecessary repetition in making their answer as brief as may be practicable. Defendants say, however, that the foregoing statutes are not the only statutes of the State of Ohio dealing with the subject of foods and drinks.

10. Defendants admit that Norman E. Shaw is Secretary of Agriculture of Ohio and Thomas C. Gault is Chief of Bureau of Dairy and Foods of the Board of Agriculture of Ohio, and that they have in their employ officers, agents and employes, and that these defendants and each of their subordinates are charged with the enforcement of the Dairy, Food and Drink Laws of the state of Ohio, including the sections of the General Code of Ohio hereinabove set forth.

11. Defendants say that not being in their present positions on the 4th day of June, 1915, they have no knowledge whether The Hebe Company submitted to the Agricultural Commission of Ohio the question as to the legality of the sale of said product within the state of Ohio and that S. E. Strode, the then duly appointed, qualified and acting member of the Agricultural Commission of Ohio, duly approved the same; defendants admit the letter from the said S. E. Strode to Hubert D. Fuller of date of June 5, 1915, the letter to said S. E. Strode, signed by Hubert B. Fuller, of date of June 4, 1915, and the letter to The Hebe Company, signed by Bert Bartlow, dated June 29, 1915, were written and sent.

12. Defendants deny that plaintiffs relied implicitly upon said action by said officials of the state of Ohio, and defendants deny that they were duly authorized by law to act in respect thereto; defendants deny that said officers had any right to affirm or acknowledge the legality of the sale of said "Hebe" in the state of Ohio, and defendants deny that plaintiffs relied upon the same, but aver that the correspondence itself shows that prior

to the date of the same plaintiffs had been shipping and selling said product in the state of Ohio; defendants have no knowledge that plaintiffs have made every effort to enlarge their business in the state of Ohio and have incurred large expense and by every other means have sought to build up and have built up a large and profitable business in the said product "Hebe" in the state of Ohio; and defendants say that such is the facility and ease of deceiving the public by such a product, that a large and profitable business in the same could be built up in any community without large expense; defendants especially deny that it would be against equity and good conscience to now deprive plaintiffs of said business or that the same was built up in reliance upon the ruling and attitude taken by said officials as aforesaid.

13. Defendants admit that they heretofore submitted to the Attorney General of Ohio for his opinion upon the law, the question of the right of plaintiffs to sell the said product "Hebe" in Ohio, and admit that the said Attorney General heretofore rendered an opinion to the effect that said product "Hebe" can not be lawfully sold or distributed in the state of Ohio under any label whatever and that its sale is absolutely prohibited.

14. Defendants admit that they and other employees and agents of the said Division of Dairy and Food have served notice upon plaintiffs and their customers in the state of Ohio that the product "Hebe" cannot be sold or distributed in the state of Ohio from and after the 9th day of July, 1918; that if after that date said product be found upon the market, these defendants and their subordinates would cause prosecutions to be brought against all wholesalers, jobbers, distributors and retailers selling, offering or exposing for sale the said product known as "Hebe" in the state of Ohio.

15. Defendants admit that the said Attorney General based his said opinion in part upon the provisions of said section 12725 of the General Code of Ohio, and other sections of the Code; but defendants are without knowledge whether plaintiffs have been advised, and they specifically deny that the construction placed upon section 12725 of the General Code of Ohio by the Attorney General as aforesaid is not the correct construction; defendants deny that said section, properly construed, does not prohibit the sale of a product composed in part of evaporated skimmed milk, if said product is plainly and fairly labeled in a conspicuous manner so as to apprise the purchaser of the true composition of such product;

defendants deny that the label used upon said product "Hebe", hereinabove referred to, fairly and conspicuously discloses to the purchaser that said product "Hebe" is in fact a compound composed of evaporated skimmed milk and vegetable fat; defendants deny that said product so labeled is not within the condemnation of any valid act of the legislature of the state of Ohio and deny that it may be lawfully sold and offered for sale in the state of Ohio.

16. Touching the allegations contained in section 16 of said bill of complaint, the same contains so many conclusions of law and fact that it is difficult for these defendants to answer the same, and in regard to the same these defendants are without knowledge.

17. Defendants deny that there is nothing contained in any statute of the said state of Ohio which would require any labeling of the said product "Hebe" other or different than the label for such product required by the National Food and Drugs Act of June 30, 1906; defendants deny that said labeling of said product required under the provisions of said section 8 of said National Food and Drugs Act of June 30, 1906, is in compliance with any labeling required by the provisions of the existing laws of the state of Ohio; defendants deny that to require any other labeling on said product "Hebe" than that which is provided for in section 8 of said National Food and Drugs Act of June 30, 1906, would be an interference with the labeling provided for and required by said National Food and Drugs Act of June 30, 1906, and that the same would be destructive of said labeling so required by said National Food Law and that it would place a burden upon the interstate commerce business of plaintiffs without serving any good purpose or bringing about any different labeling required by any statute of the state of Ohio.

18. Defendants deny that the product "Hebe" is not sold by plaintiffs to customers in Ohio or to any customers in any of the states as and for condensed milk or evaporated milk; defendants deny that it is sold under its distinctive name of "Hebe"; that it is sold in every case under the label set forth in the bill of complaint; defendants deny that "Hebe" is not sold by any of their jobbers or wholesale dealers in the state of Ohio or elsewhere as or for condensed milk or evaporated milk; defendants deny that it is sold by said jobbers and wholesale dealers under its distinctive name of "Hebe" and in every case under the label set forth in said bill of complaint; on the contrary defendants aver that in the great

majority of cases the retailers sell said "Hebe" as condensed milk without qualifications or explanation, which fact is and was well known to plaintiffs because even upon information they have not averred in the bill of complaint that "Hebe" is not sold by retailers in Ohio as and for condensed milk or evaporated milk.

Further pleading these defendants say that the nutritive quality of cream or the butter fat in milk is well and favorably known to the general public and is especially known and used as the one food which alone will sustain life and produce growth, and it is, therefore, largely used for the purpose of nourishing infants who receive no other food but milk; that the labels and advertisements used in connection with such products as "Hebe" in every instance contain the word "milk" at some place or in some form; that the retailers hold such products out to the public as milk; that being inferior to and cheaper than condensed milk from which the cream has not been removed, it is on account of its cheapness easy to sell to and is readily bought by the public; that if the oil substitute in such product has slight nutritive value, it is very inferior in life nourishing quality to the butter fat for which it is substituted and so much inferior that infants, fed upon the same exclusively, would starve; that the sale and scheme of such products as "Hebe" are based upon the well known value of butter fat, upon the fact that the latter is associated in the public mind with milk and upon the fact that retailers can and do easily sell such products from which the cream has been removed to the public for the genuine condensed milk; that on account of the great facility with which the public was and can be deceived in this matter and the great danger to the health of the public and especially infant life, there was and is no way or means by which the legislature of Ohio could protect the people of Ohio, and especially infant children, from imposition and injury except by prohibiting the sale of condensed skimmed milk.

19. Defendants deny that if section 12725 or any of the other sections of the Ohio General Code shall be construed by this Honorable Court as absolutely prohibiting the sale of a compound of evaporated skimmed milk and vegetable fat, then that said laws of Ohio, and each and all of them as so construed, are unconstitutional and void for the reasons given in section 19 of the bill of complaint, or for any other reasons.

20. Defendants admit that unless restrained by the order of this Honorable Court, they will arrest, cause to

be arrested and prosecute or assist in arresting and prosecuting each and all of the customers of plaintiffs who may sell, exchange, expose or offer for sale or exchange said product manufactured by plaintiffs known as "Hebe", and will institute as large a number of prosecutions as may be necessary to prohibit the sale of "Hebe" and protect the people of Ohio from imposition.

Touching the other allegations in paragraph 20 of the bill of complaint, defendants say that they are made up largely of arguments and conclusions of fact and law and that it is therefore difficult and unnecessary to answer the same, and touching the same these defendants say that they have no knowledge.

21. Defendants admit that by reason of their orders, certain persons in the state of Ohio are not selling and handling the product known as "Hebe" lest they subject themselves to prosecutions; and touching the other arguments, conclusions and statements in paragraph 21 defendants have no knowledge.

22. Defendants specifically deny that if prosecutions be commenced that the same would result in a multiplicity of suits, but on the contrary aver that if the courts of Ohio pass upon this matter, the people of Ohio, being law abiding, will conform to the decisions of their courts, and defendants therefore say that nothing more is necessary than one test case; defendants deny that said product "Hebe" would necessarily be involved in more than one case; defendants admit that plaintiffs would not be parties to any of said suits, but deny that they would not have a legal right to defend same or defend said product and establish its legality, but aver that it is possible for plaintiffs and customary to defend its customers in the sale of said product; defendants deny that in said prosecutions no defense can be made properly representing the interests of plaintiffs, and defendants deny that even though such prosecutions should uniformly result in the acquittal of the persons charged, yet by reason of the multiplicity thereof, said prosecutions would deter many, if not all, dealers from further dealing in said "Hebe", but on the contrary defendants say that whenever the Ohio court of last resort shall decide that the sale of "Hebe" is legal in Ohio they will desist from and cause no further prosecutions under the law. Defendants deny that the number of dealers in "Hebe" in the state of Ohio against whom such wrongful prosecutions might be brought exceeds three hundred, but on the contrary says that a single test case, in which the plaintiffs could be represented by counsel if

they so desired, would be sufficient to determine the question.

23. Defendants deny that said threatened prosecutions, if not restrained by injunction issuing out of your honorable court, would result in continuing wrong and damage to plaintiffs which cannot be compensated for in an action at law for damages; defendants deny that plaintiffs have no legal or adequate remedy at law by which they can prevent the commission of said acts complained of and deny that they are without any remedy whatsoever other than the writ of injunction herein-after prayed for, but on the contrary these defendants say that the courts of Ohio, in one criminal prosecution, can and will determine the rights of the plaintiffs and give them all the protection to which any citizen of the state of Ohio or of the United States is entitled.

24. Defendants say that the product known as "Hebe" is condensed milk, from which the cream has been removed, is adulterated and is prohibited to be sold in the state of Ohio, all as provided in section 12725 of the General Code of Ohio, and is not a compound according to the laws of Ohio.

25. Wherefore, these defendants ask that the prayer of the plaintiffs and each of them may be denied; that the bill of complaint may be dismissed; that the petition may be dismissed as to all of the defendants in the case, that these defendants may go hence without day, recover their costs in this behalf expended, and for all other and further relief to which they may be entitled, either in law or in equity.

Norman E. Shaw,  
Secretary of Agriculture of Ohio.

Thomas C. Gault,  
Chief of Bureau of Dairy and Foods of the  
Board of Agriculture of Ohio.

Joseph McGhee,  
Attorney General.

Charles J. Pretzman,  
Of Counsel.

L. D. Johnson,  
Of Counsel.

Attorneys for Defendants.

**WAIVER OF PLAINTIFFS AND STIPULATION OF  
ALL PARTIES**—Filed July 19, 1918.

Whereas, the plaintiffs commenced an action in the District Court of the United States for the Southern District of Ohio, Eastern Division, against Thomas L. Cal-

vert the then Chief of Division of Dairy and Food of the Board of Agriculture of Ohio, to obtain the same relief now prayed for in the bill of complaint herein, and

Whereas, said cause was heard before three judges, one of whom was John W. Warrington, a Circuit Judge, and the others of whom were District Judges, John E. Sater and Howard C. Hollister, upon the bill of complaint, the answer and the evidence, on the 15th day of May, 1917, and

Whereas, the defendant Thomas L. Calvert resigned as Chief of Division of Dairy and Food of the Board of Agriculture of Ohio, on the 28th day of July, 1917, and said action thereby abated, and

Whereas, without the knowledge of the court of the fact of the resignation of said defendant, Thomas L. Calvert, and of the abatement of said action said cause was determined by said three judges and a decree was entered on the 19th day of April, 1918, dismissing the bill of complaint of plaintiffs, and

Whereas, at a subsequent term of said court, to wit, on the 19th day of July, 1918, on motion of the plaintiff in said cause said court entered an order vacating and setting aside said decree entered April 19, 1918, and dismissing the bill of complaint for the reason that said action against said Thomas L. Calvert abated upon and by his resignation, and

Whereas, the parties to the above entitled action do not desire to introduce any evidence in addition to that taken in the said case of The Hebe Company and the Carnation Milk Products Company against Thomas L. Calvert, Chief of Division of Dairy and Food of the Board of Agriculture of Ohio, et al., in equity, No. 72, but desire to submit this case upon said evidence, and plaintiffs have waived and do hereby waive application for a temporary or interlocutory injunction prayed for in the bill of complaint.

Now, therefore, it is hereby stipulated by and between the parties hereto, by their respective solicitors, that the evidence, including all exhibits, taken in the case of The Hebe Company and Carnation Milk Products Company against Thomas L. Calvert, Chief of Division of Dairy and Food of the Board of Agriculture of Ohio, et al., in equity, No. 72, lately pending in the District Court of the United States for the Southern District of Ohio, Eastern Division, together with the stipulations of fact filed in said case, shall be taken as and for the evidence in this case, subject to the objections of the several parties thereto, as the same appear in the transcript thereof,

in like manner and with the same force and effect as if said evidence, exhibits and stipulations of fact had been actually introduced upon the trial of this case, and the witnesses duly sworn and their testimony given herein; all such evidence, exhibits and stipulations of fact being set forth in the transcript thereof, and filed herewith in this case.

Vorys, Sater, Seymour and Pease,  
Brode B. Davis,  
Lannen & Hickey,

Solicitors for Plaintiffs.

L. D. Johnson,  
Solicitor for Defendants.

**ENTRY**—Filed July 19, 1918

This cause coming on this 19th day of July, 1918, to be heard upon the bill of complaint and the answer thereto of the defendants, and upon the stipulation of the parties hereto, this day filed herein, and the plaintiffs having waived the prayer of the bill of complaint for a temporary or interlocutory injunction, the court does hereby order and decree that the evidence, including all exhibits, taken in the case of The Hebe Company and Carnation Milk Products Company against Thomas L. Calvert, Chief of Division of Dairy and Food of the Board of Agriculture of Ohio, et al., in equity No. 72, lately pending in the District Court of the United States for the Southern District of Ohio, Eastern Division, together with the stipulations filed in said cause, all of such evidence, exhibits and stipulations being set forth in a transcript thereof filed in this cause, are hereby admitted and received in evidence (subject to the same objections interposed by the several parties to said cause, the same appearing upon said transcript) as all the evidence offered and introduced by either of the parties hereto, in like manner and with the same force and effect as if said evidence, exhibits and stipulations were actually introduced herein and the witnesses duly sworn and the testimony given on the hearing of this cause.

Said cause coming on further to be heard upon the bill of complaint, the answer thereto and the evidence, and having been argued by counsel for the respective parties, and the court being fully advised in the premises,

It is ordered, adjudged and decreed by the court that the bill of complaint of plaintiffs be, and the same is, hereby dismissed, with costs to the defendants, to be

taxed; to which order, judgment and decree of the court dismissing the bill of complaint the plaintiffs then and there excepted and still except, which exception is hereby allowed and granted by the court.

Hollister, Judge.

**PETITION FOR ALLOWANCE OF APPEAL TO SUPREME COURT**—Filed July 19, 1918

The above-named plaintiffs, conceiving themselves aggrieved by the decree made and entered on the 19th day of July, 1918, in the above-entitled action, hereby appeal from the said order and decree to the Supreme Court of the United States, for the reasons specified in the assignment of errors which are filed herewith, and pray that this appeal may be allowed, and that a transcript of the record, proceedings and papers, upon which such order and decree was made, duly authenticated, may be sent to the Supreme Court of the United States.

Dated this 19th day of July, 1918.

Vorys, Sater, Seymour and Pease,  
Brode B. Davis,  
Lannen & Hickey,  
Solicitors for Hebe Company and  
Carnation Milk Products Company.

The foregoing appeal is allowed.

Dated July 19th, 1918.

Hollister,  
United States Judge.

**ASSIGNMENT OF ERRORS**—Filed July 19, 1918

1. The court erred in that in and by said decree it dismissed the plaintiffs' bill of complaint.

2. The court erred in that in and by said decree it holds that Section 12725 of the General Code of the State of Ohio prohibits the sale of the compound "Hebe" in the State of Ohio.

3. The court erred in that in and by said decree it holds that the laws of the State of Ohio prohibit the sale of the compound "Hebe" in the State of Ohio.

4. The court erred in that although in and by said decree it holds that Section 12725 of the General Code of the State of Ohio prohibits the sale of the compound "Hebe" in the State of Ohio, it failed to hold in and by said decree that said Section 12725, so construed, is in violation of the Fourteenth Amendment to the Constitution of the United States in that said Section 12725 deprives the plaintiffs of liberty and property without

due process of law and denies to the plaintiffs equal protection of the law.

5. The court erred in that although in and by said decree it holds that the laws of the state of Ohio prohibit the sale of the compound "Hebe" in the State of Ohio, it failed to hold in and by said decree that said laws of the state of Ohio, so construed, are in violation of the Fourteenth Amendment to the Constitution of the United States, in that said laws deprive the plaintiffs of liberty and property without due process of law and deny to the plaintiffs the equal protection of the law.

6. The court erred in that although in and by said decree it holds that Section 12725 of the General Code of the State of Ohio prohibits the sale of the compound "Hebe" in the State of Ohio, it failed to hold in and by said decree that said Section 12725, so construed, arbitrarily and unjustly discriminates against said compound "Hebe" by prohibiting the distribution and sale thereof under a conspicuous label which shows the true character of said product, such prohibition being based upon the ground that said product "Hebe" is composed in part of condensed or evaporated skimmed milk, while at the same time the laws of the State of Ohio permit the sale without restriction of uncondensed or unevaporated skimmed milk if the same be labeled "skimmed milk" as the same is specified by said laws, and that by reason of such arbitrary and unjust discrimination said Section 12725 is in violation of the Fourteenth Amendment of the Constitution of the United States in that it deprives the plaintiffs of liberty and property without due process of law and denies to the plaintiffs the equal protection of the law.

7. The court erred in that although in and by said decree it holds that the laws of the State of Ohio prohibit the sale of the compound "Hebe" in the State of Ohio, it failed to hold in and by said decree that said laws of Ohio so construed arbitrarily and unjustly discriminate against said compound "Hebe" by prohibiting the distribution and sale thereof under a conspicuous label, which shows the true character of said product, such prohibition being based upon the ground that said product "Hebe" is composed in part of condensed or evaporated skimmed milk, while at the same time the laws of the State of Ohio permit the sale without restriction of unevaporated or uncondensed skimmed milk if the same be labeled "skimmed milk," as specified by said laws, and that by reason of such arbitrary and unjust discrimination said laws of the State of Ohio are in

violation of the Fourteenth Amendment of the Constitution of the United States in that they deprive the plaintiffs of liberty and property without due process of law and deny to the plaintiffs the equal protection of the law.

8. The court erred in that although in and by said decree it holds that Section 12725 of the General Code of Ohio prohibits the sale of the compound "Hebe" in the State of Ohio notwithstanding the fact that said "Hebe" is a pure and wholesome food product and is sold under a label describing such product, it failed to hold in and by said decree that said Section 12725, so construed, is in violation of the Fourteenth Amendment of the Constitution of the United States in that said Section 12725 deprives the plaintiffs of liberty and property without due process of law and denies to the plaintiffs the equal protection of the law.

9. The court erred in that although in and by said decree it holds that the laws of the State of Ohio prohibit the sale of the compound "Hebe" in the State of Ohio, notwithstanding the fact that said "Hebe" is a pure and wholesome food product and is sold under a label clearly describing said product, it failed to hold in and by said decree that such laws of Ohio, so construed, are in violation of the Fourteenth Amendment of the Constitution of the United States in that said laws deprive the plaintiffs of liberty and property without due process of law and deny to the plaintiffs the equal protection of the law.

10. The court erred in that and by said decree, it failed to hold that under the laws of the United States governing the shipment of food and drug products in interstate shipments, known as The Food and Drugs Act approved June 30th, 1906 (34 U. S. Statutes at Large, page 768), the product "Hebe" labeled as set forth in the bill of complaint and as proved upon the trial of this cause, may be lawfully shipped by plaintiffs into the State of Ohio from without the State of Ohio, and that the plaintiffs and their customers and dealers in the State of Ohio may lawfully sell the same in that state in the original and individual cans in which the plaintiffs ship the said product into the State of Ohio.

11. The court erred in that it failed to hold in and by said decree that any prohibition in said Section 12725 of the General Code of Ohio of the right of the plaintiffs and their customers and dealers in the State of Ohio to sell the product "Hebe" in the original and individual cans in which the plaintiffs ship the product into the

State of Ohio from without the State of Ohio, in the manner described in plaintiff's bill of complaint and as proved upon the trial of this cause, is an unlawful interference with the Interstate Commerce Laws of the United States.

12. The court erred in that in and by said decree it failed to hold that any prohibition in the laws of the State of Ohio of the right of the plaintiffs and their customers and dealers in the State of Ohio to sell the product "Hebe" in the original cans in which the plaintiffs shipped the product into the State of Ohio from without the State of Ohio in the manner described in plaintiffs' bill of complaint and proved upon the trial of this cause, is an unlawful interference with the Interstate Commerce Laws of the United States.

13. The court erred in that in and by said decree it failed to hold that the original and individual cans in which the plaintiffs ship the said product "Hebe" into the State of Ohio from without the state of Ohio in the manner described in the plaintiffs' bill of complaint, and as proved upon the trial of this cause, said cans being labeled as required by the National Food and Drugs Act, approved June 30th, 1906, (34 U. S. Statutes at Large, page 768) are the original packages within the meaning, intent and effect of said National Food and Drugs Law; and that any prohibition in the laws of the State of Ohio of the right of plaintiffs and their customers and dealers in the State of Ohio to sell the product "Hebe" in such original and individual cans is in violation of said National Food and Drugs Law, and such laws of Ohio are unconstitutional and void in that they are in conflict with said National Food and Drugs Law and the national regulations duly and regularly made thereunder.

14. The court erred in that in and by said decree it failed to hold that Section 12725 of the General Code of Ohio prohibiting the sale by the plaintiffs and their customers and dealers of the product "Hebe" in the State of Ohio is void because the same is unjust, arbitrary, unduly discriminating and confiscatory.

Wherefore, plaintiffs pray that said decree may be reversed, and that said court may be ordered to enter a decree in accordance with the prayer of the Bill of

Complaint or in such form as to this court may seem just and proper.

A. T. Seymour,  
Brode B. Davis,  
Thomas E. Lannen,  
Solicitors for Hebe Company and  
Carnation Milk Products Company.

**ORDER ALLOWING APPEAL**—Filed July 19, 1918

The petition of The Hebe Company and Carnation Milk Products Company is hereby granted and the appeal allowed upon petitioners filing within thirty days hereafter a bond conditioned as required by law, with good and sufficient security to be approved by the court, said bond to be in the sum of \$500.00.

Hollister,  
District Judge.

**COPY OF CITATION**—Filed July 19, 1918

United States of America, ss.:

The President of the United States:

To Norman E. Shaw, Secretary of Agriculture of Ohio, and Thomas C. Gault, Chief of Bureau of Dairy and Foods of the Board of Agriculture of Ohio:

Greeting:

You are hereby cited and admonished to be and appear at a session of the Supreme Court of the United States to be holden at the City of Washington, District of Columbia, within thirty days from the date hereof, pursuant to an appeal, filed in the Clerk's office of the District Court of the United States for the Southern District of Ohio, Eastern Division, wherein The Hebe Company and Carnation Milk Products Company are appellants and you are appellees, to show cause, if any there be, why the decree rendered against said appellants as in the said appeal mentioned, should not be corrected and why speedy justice should not be done to the parties in that behalf.

Witness the Honorable Edward Douglas White, Chief Justice of the United States, this nineteenth day of July in the year of our Lord One Thousand Nine Hundred and Eighteen, and of the independence of the United States of America One Hundred and Forty Two.

Hollister,

Judge of the District Court of the United States,  
for the Southern District of Ohio.

On behalf of the appellees we hereby acknowledge

service of the attached citation and receipt of copy thereof this 19th day of July, A. D. 1918.

Norman E. Shaw, Secretary of Agriculture of Ohio, and Thomas C. Gault, Chief of Bureau of Dairy and Foods of the Board of Agriculture of Ohio.

By Joseph McGhee,  
Attorney General of the State of Ohio.

L. D. Johnson,  
Special Counsel.  
Solicitors for Appellees.

**COPY OF BOND**—Filed July 19, 1918

Know all men by these presents, That we, The Hebe Company and Carnation Milk Products Company, corporations, as principals, and The Aetna Casualty and Surety Company, as surety, are held and firmly bound unto Norman E. Shaw, Secretary of Agriculture of Ohio, Thomas C. Gault, Chief of Bureau of Dairy and Foods of the Board of Agriculture of Ohio, and all other officers and agents claiming to act under the authority of said Board of Agriculture of Ohio, or of the Secretary of Agriculture of Ohio, in the full and just sum of Five Hundred (\$500.00) Dollars, to be paid to the said Norman E. Shaw, Secretary of Agriculture of Ohio, and others, certain attorneys, executors, administrators or assigns: to which payment, well and truly to be made, we bind ourselves, our heirs, executors and administrators, jointly and severally, by these presents. Sealed with our seals and dated this 19th day of July, in the year of our Lord one thousand nine hundred and eighteen.

Whereas, lately at a regular term of the District Court of the United States for the Southern District of Ohio, Eastern Division, in a suit depending in said Court, between The Hebe Company and Carnation Milk Products Company, corporations, plaintiffs, and Norman E. Shaw, Secretary of Agriculture of Ohio, and others, Defendants, a decree was rendered against the said The Hebe Company and Carnation Milk Products Company, and the said The Hebe Company and Carnation Milk Products Company having obtained an appeal and filed a copy thereof in the Clerk's Office of the said Court to reverse the decree in the aforesaid suit, and a citation directed to the said Norman E. Shaw, Secretary of Agriculture of Ohio, and others, citing and admonishing them to be and appear at a session of the Supreme Court of the United States, to be holden at the City of Washington, D. C., on the 17th day of August next.

Now, the condition of the above obligation is such, That if the said The Hebe Company and Carnation Milk Products Company shall prosecute said appeal to effect, and answer all cost if they fail to make their plea good, then the above obligation to be void; else to remain in full force and virtue.

Sealed and delivered in presence of Harry F. Rabe.

The Hebe Company (Seal).

Carnation Milk Products Company (Seal).

By Brode B. Davis,

Their Agent and Attorney.

The Aetna Casualty and Surety Company.

John P. Ryan,

Attorney-in-Fact.

Approved by Hollister, U. S. District Judge, July 19th, 1918.

### OPINION—Filed July 19, 1918

This case was submitted to me, Judge Sater being absent on his vacation, on the Bill, the Answer, the stipulation of counsel filed this day, July 19, 1918, and the evidence and testimony as contained in the transcript of evidence and testimony taken on the hearing of the case of The Hebe Company and Carnation Milk Products Company, corporations, Plaintiffs, v. Thomas L. Calvert, Chief of Division of Dairy and Food of The Board of Agriculture of Ohio, et al., Defendants, No. 72 in Equity, when that case was tried before Warrington, Circuit Judge, and Sater and Hollister, District Judges, which transcript so embodying the testimony and evidence has been stipulated by counsel for the parties in this case to be used for and as the evidence and testimony in this case. The opinion written in that case by Judge Sater was concurred in by Judge Warrington and Judge Hollister.

As it would serve no useful purpose for the questions involved to be now elaborately dealt with in another opinion, I shall therefore now, and do, adopt the opinion of Judge Sater filed in case No. 72, hereinbefore referred to, as the court's opinion upon the present issues involved in this case.

Judge Sater's opinion referred to is now, for convenience, set out at length:

Before Warrington, Circuit Judge, and Sater and Hollister, District Judges.  
Sater, District Judge:

Jurisdiction of this case is vested in the court through the presence of federal questions and the diverse citi-

zenship of the parties litigant. *Rail & River Coal Co. v. Yaple*, 214 Fed. Rep. 273, 277, *Ohio River & W. Ry. Co. v. Dittey*, 203 Fed. Rep. 537, 539, and authorities there cited. Both of the plaintiffs are foreign corporations. The defendants are Calvert, Chief of Division of Dairy and Food of the Board of Agriculture of Ohio, and other officers and agents of such Board. The plaintiffs were authorized by Calvert's predecessor in office to sell in Ohio their food products known as "Hebe," if appropriately labeled. One-half of the label adopted and thereafter used is as follows—the remaining half being the same as the portion here shown:

After Calvert entered upon the discharge of his duties, at his instance an opinion was rendered by the State's Attorney General, in which it was held that in view of the provisions of sections 12716, 12717, and 12725, considered in connection with sections 5774 and 5778, Ohio General Code, and the reasoning of *Reiter v. State*, 109 Md., 235, "Hebe," whether it be a compound or otherwise, cannot be sold in Ohio because the major part of it is adulterated condensed milk to which a minor constituent (cocoanut oil) has been added and because it is regarded by a large percentage of the public as genuine condensed milk, whereby the public is misled and deceived into its purchase and use for the condensed article made of whole or standard milk. The plaintiffs and their customers were thereupon notified by the defendants that, unless further sales of their product in Ohio be discontinued, prosecutions would follow and the penalties provided by statute would be inflicted on all who should fail to desist. The bill charges that such prosecutions against the plaintiffs and those selling their product, whether they be their wholesalers or their more than three hundred retailers, would result in a great multiplicity of suits and would greatly and irreparably injure their business in the state, even if the prosecutions should terminate favorably to the accused. Injunctive relief is sought against the enforcement by the State's officers of the pertinent sections of the State statute, on the ground of their unconstitutionality. The presence of three Judges is therefore necessary to a hearing of the case. Sec. 266, Judicial Code. If the threatened acts of the defendants are in excess of the authority vested in them by law, an action to enjoin them is within the jurisdiction of a Federal court, both diverse citizenship and the necessary jurisdictional amount being present. *Ex Parte Young*, 209 U. S. 123. The issues having been made up, the case was heard on

its merits. It is now for decision with reference to the Ohio statutes.

The terms "evaporated" and "condensed" as applied to milk are, as generally understood, synonymous, and they will for the purposes of this opinion be so regarded. Hebe is recognized by the Bureau of Chemistry of the National Department of Agriculture as a compound. Ninety-four per cent. of it is evaporated skimmed milk; the remaining six per cent. is cocoanut oil, highly refined and of good quality, which in its properties, as disclosed by the record, more nearly resembles butter fat than any other known substance. The two ingredients are by an undisclosed process so brought together as to remain properly combined until the food product is ready for consumption. There is no claim that the product, or either of its ingredients, is impure or unwholesome. The article is produced in and shipped from Wisconsin by the plaintiffs to jobbers in various states, including Ohio, on orders accepted in the state of Washington, and reaches consumers through retailers who purchase of such jobbers. It is transported in cans which are packed in enclosing, sealed, fiber shipping-cases, completely concealing the cans and their labels, each case containing either forty-eight cans of one pound each or ninety-six cans of six ounces each. When shipped in carload lots the shipping-cases bear only the name of the consignee and other data appropriate for identification and delivery. When such cases are received by the retailer, he removes the cans and exposes them for sale to his customers. The plaintiffs' position is that their food product, being plainly and fairly labeled in a conspicuous manner, is not within the condemnation of the Ohio statute and may be lawfully sold and offered for sale in such state. It is further claimed that if the Ohio statute, correctly construed, prohibits the sale of Hebe, a compound composed of two well known articles of food, each of which is pure, wholesome and nutritious, it is in that event violative of the fourteenth amendment of the Federal constitution in that (a) it deprives the plaintiffs of liberty and property without due process of law and also denies them the equal protection of the law; (b) it does not regulate the sale of "Hebe," but arbitrarily, unjustly, unduly and in a confiscatory manner, discriminates against it and prohibits its distribution and sale, although such article is so conspicuously and correctly labeled as to show its true character, and, although the statute permits the sale of uncondensed skimmed milk, if it be labeled

skimmed milk; (c) by its denial of the right to sell "Hebe" in individual tin cans, which cans are labeled as required by the National Food and Drugs Act and are "original packages" in so far as that Act is concerned, it conflicts with such Act and the regulations made in accordance with it and unlawfully interferes with the interstate commerce laws of the United States.

Chapter I of "Part Two, Title II, Police Regulations" of the Ohio code deals with "Adulterations." It provides *inter alia* as follows: No person within the state shall manufacture, offer for sale, sell or deliver, or have in his possession with intent to sell or deliver, any article of food which is adulterated or misbranded within the meaning of such chapter. Sec. 5774. A compound article is a food, if used by man as such. Sec. 5775. A food is adulterated, if a valuable or necessary constituent or ingredient has been wholly or in part abstracted from it. Sec. 5778. It is misbranded, if it is labeled so as to deceive or mislead the purchaser, or if the label on the package containing the food bears a statement regarding such food which is false or misleading in any particular (Sec. 5785), provided, however,

"That this section shall not apply to mixtures or compounds recognized as ordinary articles or ingredients of articles of food or drink, if each package sold or offered for sale is distinctly labeled in words of the English language as mixtures or compounds, with the name and percentage, in terms of one hundred per cent. of each ingredient therein. The word 'compound' or 'mixture' shall be printed in letters and figures not smaller in height or width than one-half of the largest letter upon any label on the package, and the formula shall be printed in letters and figures not smaller in height or width than one-fourth the largest upon any label on the package, and such compound or mixture must not contain an ingredient that is poisonous or injurious to health."

The provisions of Chapter 6, found in "Part Fourth, Title I, Felonies and Misdemeanors," and dealing with "Offenses Against Public Health," are also pertinent to the subject matter under consideration. It declares milk to be standard or unadulterated, if it contains not more than eighty-eight per cent. of watery fluid, and not less than twelve per cent. of solids or three per cent. of fats. Sec. 12716. Whoever sells, exchanges or delivers, or has in his custody or possession with intent to sell or exchange, or exposes or offers for sale or exchange, adulterated milk, is subject to a fine for his first offense, to a fine or imprisonment for his second offense (Sec. 12717),

and to both fine and imprisonment for any subsequent offense (Sec. 12718). In view of Sec. 5778, milk from which the cream or butter fat has been removed, i. e. skimmed milk, is not pure, but is adulterated. Sec. 12720, however, permits the sale of such milk, if conspicuously labeled "Skimmed Milk," notwithstanding the provisions of Sections 5774, 5778, 12717 and 12718, and therefore serves as an exempting clause to those sections. By "skimmed milk" is meant milk from which its natural cream has been taken in whole or in part. *Commonwealth v. Hufnal*, 185 Pa., 376, 380. Sec. 12725 is as follows:

"Whoever manufactures, sells, exchanges, exposes or offers for sale or exchange, condensed milk unless it has been made from pure, clean, fresh, healthy, unadulterated and wholesome milk, from which the cream has not been removed and in which the proportion of milk solids shall be the equivalent of twelve per cent. of milk solids in crude milk, twenty-five per cent. of such solids being fat, and unless the package, can or vessel containing it is distinctly labeled, stamped or marked with its true name, brand, and by whom and under what name made, shall be fined not less than fifty dollars nor more than two hundred dollars, and, for each subsequent offense, shall be fined not less than one hundred dollars nor more than five hundred dollars and imprisoned not less than ten days nor more than ninety days."

Compound foods were first legally recognized by Sec. 2 (now, in so far as pertinent, Sec. 5775) of the act of March 20, 1884, 81 Ohio L., 67. Sec. 12725, in substance, but with some variation in phraseology, originally appeared as Sec. 13 of the supplementary act of May 17, 1886, 83 Ohio L., 178, entitled, "An Act to Prevent Adulteration of and Deception in the Sale of Dairy Products," i. e., cheese, butter and milk. A perusal of the act shows that its provisions conform to the purpose declared in the enacting clause. When the legislature came to the enactment of Sec. 13 for the purpose of regulating the manufacture and sale of condensed milk, it knew that within legal limitations compound foods were permissible, and recognized, as appears by necessary implication from the section itself, that an article might, as the law then stood, be made and marketed as condensed milk (if such had not already been done), which was not made from whole or natural milk. It declared, to the exclusion of skimmed or any other form of adulterated milk and of any and all mixtures and compounds in which such milk is an ingredient, that there should be

but one kind of condensed milk and that it should be made of pure, clean, fresh, healthy, unadulterated, wholesome standard milk. Its purpose is to secure to the population, adult and infant, wholesome condensed milk of a certain standard of strength and purity. It is the conception of the law that condensed milk made from milk below the prescribed standard is not wholesome.

One of the purposes of the several acts relating to foods and drugs and to dairy products is to prevent deception in their sale to consumers and to preserve the public health. *State v. Capital City Dairy Co.*, 62 Ohio St., 350; *State v. Hutchinson*, 56 Ohio St., 82; *Arbuckle v. Blackburn*, 113 Fed. Rep., 616, C. C. A., 6. The construction thus given to such statutes by the state's highest judicial tribunal must be accepted. *Price v. Illinois*, 238 U. S., 446, 451. There is a conflict in the evidence as to whether "Hebe" is as nutritious and as effective as a growth producer, and therefore as a health promoter and maintainer, as the legally recognized condensed milk. So long as that question is debatable, the legislature is entitled to its own judgment, and that judgment may not be superseded by the views of the court. *Price v. Illinois*, *supra*, at p. 452; *Rast v. Dan Deman & Lewis*, 240 U. S., 342, 357; *Atlantic Coast Line v. Georgia*, 234 U. S., 280, 288; *Stass v. State*, 23 Ohio Circuit Decisions, affirmed without report, 81 Ohio St., 497; *Klopfer v. Board of Health*, 9 Ohio Nisi Prius (N. S.), 33. With the wisdom of the exercise of that judgment the court has no concern; and, unless it clearly appears that the enactments have no substantial relation to a proper purpose, it cannot be said that the limit of legislative power has been transcended. *Purity Extract Co. v. Lynch*, 226 U. S., 192, 201, 202. Nor is it material that Hebe was not known when the Ohio statutes under consideration were enacted and that the legislature may have unwittingly prohibited the sale of an article of which it had no knowledge. *Reiter v. State*, 109 Md., at p. 240. As to the practice of deception on consumers in the sale of the plaintiffs' product, there is substantial and uncontradicted evidence that it is represented to be and is sold as "Hebe milk" and as condensed milk. The monetary value of the cocoanut oil substituted for the butter fat removed from the milk by skimming is much less than that of such fat, the cost of the oil prior to the commencement of the present European war being about thirteen cents and at the time of the hearing about nineteen cents per pound. The difference between the price at which condensed milk and "Hebe" respec-

tively may be manufactured and sold is such that the temptation to impose upon the public has been too great to be resisted. It seems that when the form of label was under consideration by Calvert's predecessor in office and when the attorney general's opinion was rendered, there were but three wholesalers in the state that were distributing the plaintiffs' product. One of them in filling a contract of some magnitude with the United States Military Department twice supplied "Hebe" to fill an order for evaporated milk. The substitution was not detected until after the second delivery of goods was made. They were then returned to the seller. It is in evidence that the plaintiffs have instructed their representatives to sell their product for what it really is, but, the purpose of the statute being to protect the people from deception by selling them one thing when they desire another, it is not important whether the plaintiffs intend or do not intend to deceive. They are the producers of an article which, it sufficiently appears, is freely sold by some retail dealers, at least, as a brand of condensed milk, of which there are several on the market, and is susceptible of being thus sold and used, and has in good faith been bought by ordinary purchasers as such. The label, it is true, states that "Hebe" is a compound and names the elements of which it is composed, but it also informs the public that it may be used "for coffee and cereals, for baking and cooking." It may be applied to and is designed for the same uses as condensed milk. Its appearance is that of condensed milk, and, if there be a difference in the taste of the two, it is not such as the layman would be likely to detect. Blame cannot, therefore, be rightfully imputed to the unwary consumer who does not closely scrutinize the label upon the package in which "Hebe" is contained, and who concludes that that article, applied as it may be, to the same purposes as condensed milk, is and must be condensed milk itself, although parading under a fanciful name, and especially when it is sold to him by the retailer in response to an inquiry for such milk. Whether "Hebe" is as wholesome and nutritious as condensed milk is unimportant, so long as it is used as an instrument of fraud. *Powell v. Pennsylvania*, 127 U. S., 678. Producers of an article of food which may be and is used to deceive the public are not favored in courts of equity.

The lawmakers have asserted and the State Supreme Court has broadly declared the constitutional right to enact statutes here under consideration pertaining to foods, drugs, and dairy products. *State vs. Hutchinson*; *State*

vs. Capital City Dairy Co., affirmed in Capital City Co. v. State, 183 U. S. 238. The sections which specifically deal with condensed and skimmed milk were not involved, it is true, in the cases just cited, but the regulatory rules which pervade those sections are so similar in character to those which govern the manufacture and sale of butter and oleomargine and other foods and drugs as to bring such sections well within the provisions of the Ohio constitution and render the last cited decisions applicable. They are furthermore regulatory and not prohibitive. State v. Capital City Dairy Co., at pp. 363, 364, 365; Capital City Dairy Co. v. State, at p. 246; State v. Rippeth, 71 Ohio St., 85, 87; Capital City Dairy Co. v. Ohio, 183 U. S. at p. 246; Butler v. Chambers, 1 Am. St. Rep. 638, and extended note, 36 Minn., 69. They forbid the practicing of fraud upon the general public. They seek to suppress false pretenses, to promote fair dealing and the public health in the sale of an article of food. They do not prohibit the manufacture and sale of all condensed milk, but guarantee to consumers a pure dairy product and prevent the sale of an adulterated or deceptive article. The constitution of the United States does not secure to any one the privilege of manufacturing and selling an article offered in such manner as to induce purchasers to believe they are buying something which is in fact different from that which is offered for sale. That the State may rightfully enact a law such as that now under consideration and that such law does not contravene any provision of the Federal constitution appears from many well considered cases. In Price v. Illinois, at p. 451, in which a statute prohibiting the use of boric acid in food preservatives was upheld, it was said that—

“The state has undoubted power to protect the health of its people and to impose restrictions having reasonable relation to that end. The nature and extent of restrictions of this character are matters for the legislative judgment in defining the policy of the state and the safeguards required. In the avowed exercise of this power, the legislature of Illinois has enacted a prohibition—as the statute is construed—against the sale of food preservatives containing boric acid and unless this prohibition is palpably unreasonable and arbitrary, we are not at liberty to say that it passes beyond the limits of the state's protective authority.”

In Dent v. West Virginia, 129 U. S., 114, 122, it was announced that the power of the state to provide for the general welfare of its people authorizes it to prescribe all such regulations as, in its judgment, will secure or tend

to secure them against the consequences of ignorance and incapacity, as well as deception and fraud. Mr. Justice Harlan, in *Plumley v. Massachusetts*, 155 U. S. 461, 472, after citing the *Dent* case to the above point, added:

“ “If there be any subject over which it would seem the states ought to have plenary control, and the power to legislate in respect to which, it ought not to be supposed, was intended to be surrendered to the general government, it is the protection of the people against fraud and deception in the sale of food products. Such legislation may, indeed, indirectly or incidentally affect trade in such products transported from one state to another state. But that circumstance does not show that the laws of the character alluded to are inconsistent with the power of Congress to regulate commerce among the states.”

There are many other cases to the point that the legislation of a state, such as is here under consideration, not directed against commerce or any of its regulations, but relating to the rights, duties and liabilities of citizens, and only indirectly and remotely affecting the operations of commerce, is valid and of obligatory force upon citizens within its territorial jurisdiction, whether engaged in commerce, foreign or interstate, or in any other pursuit among which are *Sherlock v. Alling*, 93 U. S. 99, 103; *Rahrer's Case*, 140 U. S. 546; *Standard Stock Food Co. v. Wright*, 225 U. S. 540, 547; and *The Minnesota Rate Cases*, 230 U. S. 352, 408.

Reliance is placed by the plaintiffs on *McDermott v. Wisconsin*, 228 U. S. 115, in which it was held that the word “package” or its equivalent expression, as used by Congress in sections 7 and 8 of the Pure Food and Drugs Act (June 30, 1906, 34 Stat. 768), in defining what shall constitute adulteration and what shall constitute misbranding within the meaning of that act, refers to the immediate container of the article which is intended for consumption, and that, when an article in interstate commerce is by the terms of that act properly labeled, a state cannot require such label, when property affixed, to be removed and other labels authorized by its own statute to be affixed to the package containing the article, so long as it remains unsold by the importer, whether it be in the original case or not. It is claimed that the teachings of that case are that the protection accorded to articles of interstate commerce by the Federal constitution extends to the sale in Ohio by wholesale and retail dealers in plaintiffs' goods in the original packages,

i. e., the labeled tin containers, notwithstanding the Ohio statute under consideration. The Wisconsin act was in direct conflict with the Federal act, which covers the field, as regards the labeling of articles of food which are transported in interstate commerce, and leaves nothing on which a state law touching labels can operate. The object of the Federal act is to prevent the misuse of the facilities of interstate commerce in conveying to and placing before the consumer misbranded and adulterated articles of medicine or food; and, in order that its protection may be afforded to those who are intended to receive its benefits, the brands or labels, the regulation of which is within the power of Congress, it was properly held, must be upon the package intended to reach the purchaser. But it was also expressly stated that it by no means follows that the state is not permitted to make regulations with a view to the protection of its people against fraud or imposition by impure food or drugs. The plaintiffs' contention must fail, for the reason that where the mode of putting up and labeling a package is adapted to meet the requirements of local trade or intrastate commerce and its sale is conducive to the deception of the consumer, the dealer will not be protected on the ground that he is selling an original package. The police power of a state extends to all regulations of its internal commerce designed to prevent imposition and fraud, as well as to those designed to promote public health, public morals, or public safety, although the regulations prescribed may incidentally affect interstate commerce, provided Congress has not acted in the particular matter. Congress has not declared that an article of food whose transportation in interstate commerce is permissible under the terms and provisions of the Pure Food and Drugs Act may be sold in a state to which it has been shipped, if such article is susceptible of use and is used as a means of deceiving consumers. The self-protecting power of the state may be rightfully exerted against its introduction, and such exercise of power cannot be considered a regulation of commerce prohibited by the constitution. *Savage v. Jones*, 225 U. S., 501; *Sligh v. Kirkwood*, 237 U. S., 52; *Mutual Film Co. v. Industrial Commission of Ohio*, 215 Fed. Rep., 138; *Hall v. Geiger-Jones Co.*, 242 U. S., 539; *Arbuckle v. Blackburn*.

Nor does the Ohio statute contravene the fourteenth amendment to the Federal constitution. It has drawn a distinction as it may do (*Rast v. Van Deman & Lewis*, 240 U. S., 342, 357), between condensed milk made in ac-

cordance with its terms and that which is otherwise produced, and between the manufacturers and sellers of such respective kinds of milk. The statute, like that under consideration in *Powell v. Pennsylvania*, 127 U. S., 678, 687, places under the same restrictions, and subjects to like penalties and burdens, all who manufacture or sell, or offer for sale, or keep in possession to sell, the articles embraced by its prohibitions—thus recognizing and preserving the principle of equality among those engaged in the same business. We cannot say that the Ohio statute is unreasonable and arbitrary and deprives the plaintiffs of property without due process of law. *Price v. Illinois*; *St. John v. New York*, 201 U. S., 633.

Whether either standard or skimmed milk may be used as a constituent element of a compound or mixed food, and whether "Hebe" is nothing more than adulterated condensed milk with a minor ingredient added, and other questions discussed by counsel, need not be decided, although they have received the thoughtful consideration of the court.

A decree may be entered dismissing the bill.

We concur in the foregoing opinion.

J. W. Warrington,  
Circuit Judge.

H. C. Hollister,  
District Judge.

Of course, the statement in that opinion, "the presence of three judges is therefore necessary to a hearing of the case, Sec. 266 of the Judicial Code," is not applicable to any of the present issues and is not adopted as a part of this opinion.

The label referred to in Judge Sater's opinion is the same as the label incorporated in and attached to the bill of complaint herein.

A decree may be entered dismissing the bill.

Hollister,  
District Judge, Southern District of Ohio.  
Cincinnati, July 19, 1918.

**STIPULATION AND PRECIPE**—Filed July 31, 1918  
Honorable B. E. Dilley,

Clerk of the United States District Court,  
Columbus, Ohio.

The Clerk will please prepare a transcript of the record of the above entitled cause for filing in the Supreme Court of the United States, including and incorporating therein the following:

Bill of complaint, answer of defendants, waiver of

plaintiffs and stipulation of all parties, order admitting evidence, exhibits and stipulations taken in the case of The Hebe Company and Carnation Milk Products Company against Thomas L. Calvert, Chief of Division of Dairy and Food of the Board of Agriculture of Ohio, et al., in equity, No. 72, lately pending in the District Court of the United States, for the Southern District of Ohio, Eastern Division, and dismissing the bill of complaint, petition for appeal, assignment of errors, order allowing appeal, copy of citation, copy of bond, statement of evidence certified by Judge Hollister, opinion of Judge Hollister, including opinion of Judge Sater therein adopted, stipulation and precipe, certificate of Clerk to transcript.

A. T. Seymour,  
Brode B. Davis,  
Thomas E. Lannen,

Solicitors for The Hebe Company and  
Carnation Milk Products Company.

On behalf of defendants, we hereby acknowledge service of the within and foregoing precipe and stipulate and agree that the portions of the record therein set forth shall constitute the transcript of record on appeal in the Supreme Court of the United States.

Norman E. Shaw, Secretary of Agriculture  
of Ohio, Thomas C. Gault, Chief of Bureau of Dairy and Foods of the Board of Agriculture of Ohio,

By L. D. Johnson, Special Counsel for the  
State of Ohio, Their Solicitors.

#### **STATEMENT OF EVIDENCE AND CERTIFICATE OF APPEAL—Filed Aug. 1, 1918**

Be it remembered, and certified, that on the hearing of the above entitled cause on the 19th day of July, A. D. 1918, upon the bill of complaint and answer to said bill, the plaintiff introduced in evidence the following testimony, to-wit:

The plaintiffs waived application for a temporary or interlocutory injunction, and all parties stipulated as follows:

"Whereas, the plaintiffs commenced an action in the District Court of the United States for the Southern District of Ohio, Eastern Division, against Thomas L. Calvert the then Chief of Division of Dairy and Food of the Board of Agriculture of Ohio, to obtain the same relief now prayed for in the bill of complaint herein, and

Whereas, said cause was heard before three judges one of whom was John W. Warrington, a Circuit Judge, and the others of whom were District Judges, John E. Sater and Howard C. Hollister, upon the bill of complaint, the answer and the evidence, on the 15th day of May, 1917, and

Whereas, the defendant Thomas L. Calvert resigned as Chief of Division of Dairy and Food of the Board of Agriculture of Ohio, on the 28th day of July, 1917, and said action thereby abated, and

Whereas, without the knowledge of the court of the fact of the resignation of said defendant, Thomas L. Calvert, and of the abatement of said action of said cause was determined by said three judges and a decree was entered on the 19th day of April, 1918, dismissing the bill of complaint of plaintiffs, and

Whereas, at a subsequent term of said court, to wit, on the 19th day of July, 1918, on motion of the plaintiff in said cause said court entered an order vacating and setting aside said decree entered April 19, 1918, and dismissing the bill of complaint for the reason that said action against said Thomas L. Calvert abated upon and by his resignation, and

Whereas, the parties to the above entitled action do not desire to introduce any evidence in addition to that taken in the said case of The Hebe Company and the Carnation Milk Products Company against Thomas L. Calvert, Chief of Division of Dairy and Food of the Board of Agriculture of Ohio, et al., in equity, No. 72, but desire to submit this case upon said evidence, and plaintiffs have waived and do hereby waive application for a temporary or interlocutory injunction prayed for in the bill of complaint.

Now, therefore, it is hereby stipulated by and between the parties hereto, by their respective solicitors, that the evidence, including all exhibits, taken in the case of The Hebe Company and Carnation Milk Products Company against Thomas L. Calvert, Chief of Division of Dairy and Food of the Board of Agriculture of Ohio, et al., in equity, No. 72, lately pending in the District Court of the United States for the Southern District of Ohio, Eastern Division, together with the stipulations of fact filed in said case, shall be taken as and for the evidence in this case, subject to the objections of the several parties thereto, as the same appear in the transcript thereof, in like manner and with the same force and effect as if said evidence, exhibits and stipulations of fact had been actually introduced upon the trial of this case, and the wit-

nesses duly sworn and their testimony given herein; all such evidence, exhibits and stipulations of fact being set forth in the transcript thereof, and filed herewith in this case."

Thereupon the following facts were agreed upon and stipulated between plaintiffs and defendants through their solicitors respectively, as follows:

"Stipulation of Facts.

"It is hereby stipulated that the following are facts in the above entitled case; provided however that any party to this case may object to the competency or relevancy of the same or any part thereof:

"1. The Hebe Company is a corporation of the State of Washington and a citizen and resident of said state and its principal place of business is in the City of Seattle in said state; and Carnation Milk Products Company is a corporation of the State of Maine and a citizen and resident of said state and has its principal office in said state; and both The Hebe Company and Carnation Milk Products Company have numerous principal places of business throughout the United States outside of the State of Ohio.

"2. Defendant Norman E. Shaw is Secretary of Agriculture of Ohio and defendant Thomas C. Gault is Chief of Bureau of Dairy and Foods of The Board of Agriculture of Ohio and they are citizens and residents of the state of Ohio; and other unnamed defendants are officers and agents claiming to act under the authority of The Board of Agriculture of Ohio and are all citizens and residents of the State of Ohio.

"3. Plaintiffs are engaged in manufacturing and selling outside of the State of Ohio, and shipping to the State of Ohio, the food product described in the bill of complaint filed herein.

"4. Plaintiffs do business in said food product with wholesale dealers, jobbers and distributors, residing and doing business in the State of Ohio.

"5. Plaintiffs receive orders for said food product from said wholesale dealers, jobbers and distributors in the State of Ohio, and then fill said orders by shipping said product from plaintiffs' places of business outside of the State of Ohio to said wholesale dealers, jobbers and distributors in the State of Ohio; and said wholesale dealers, jobbers and distributors then sell said product to retail dealers (and in some instances directly to large consumers such as restaurants and hotels) in the State of Ohio; and said retail dealers sell the said food product direct to consumers in the state of Ohio, and offer it

for sale to consumers, and expose it for sale to consumers, and have it in their possession with intent to sell to consumers, in the said State of Ohio, (the place of acceptance by plaintiffs of said orders may be established by oral proof).

"6. Said food product is dealt in, sold, offered for sale, exposed for sale, and had in possession with intent to sell, by wholesale dealers, jobbers, distributors, and retail dealers in many of the principal cities, towns and villages of the said State of Ohio.

"7. The amount involved in this case exceeds, exclusive of interest and costs, the sum of three thousand dollars (\$3,000), and the value of the business which plaintiffs seek to protect by this suit exceeds the sum of three thousand dollars (\$3,000), exclusive of interest and costs.

"8. The defendants named and referred to in the bill of complaint are charged with the enforcement of the dairy, food and drink laws of the State of Ohio, including the sections of the General Code of Ohio particularly involved in this case. On the fourth day of June, 1915, the Agricultural Commission of Ohio was charged by law with the duty of enforcing the laws of the State of Ohio dealing with the subject of food and drinks, and including the laws involved in this case, and one S. E. Strode was the then duly appointed, qualified and acting member of the Agricultural Commission of Ohio, and said Agricultural Commission on June fifth, 1915, through its duly authorized agent, caused the following letter to be sent to Mr. Hubert B. Fuller, who was then acting as attorney for The Hebe Company, the plaintiffs in this case:

"June 5, 1915.

Mr. Hubert B. Fuller, 1110 Williamson Bldg., Cleveland, Ohio.

Dear Mr. Fuller: Yours of June 4th, stating your understanding of the verbal agreement made between Mr. Stevens of the Hebe Co. and this department, received.

I wish to say that your statement is entirely in accord with my understanding. The Hebe Company agrees to change its labels to conform to the rulings and regulations of the national and Ohio pure food departments. Copy of label is to be submitted and approved by this department. The company further agrees not to ship any goods into the state until these labels have been approved.

The department agrees to permit the sale of all Hebe products bearing the old label which was shipped into the state prior to May 1, 1915, and distributed by the Monypeny-Hammond Co., Columbus, Ohio; The Dall-

Milliken Grocery Co., Washington, C. H., and The Weekly-Worman Co., Dayton, Ohio.

Very respectfully,

S. E. Strode,

Commissioner in Charge."

Said letter was sent in response to a letter of inquiry submitted to said official on behalf of The Hebe Company, a copy of which letter is as follows:

"Cleveland, Ohio, June 4, 1915.

Hon. S. E. Strode, State Dairy and Food Commissioner, Columbus, Ohio.

My Dear Mr. Strode: Mr. Stevens, of the Hebe Company, and I were very much pleased with the result of our conference with you and Mr. Bartlow yesterday.

In line with my suggestion, I am writing this letter to you in order that there may be no possible room for misunderstanding as to just what agreement was reached.

First of all, for The Hebe Company we agree that we will not ship into Ohio any more of our products known as 'Hebe' except that which bears the label approved yesterday by you and Mr. Bartlow. As soon as we can secure them from the lithographers, we will send you two copies of this label; one to be retained for your files and the other to be stamped and returned to us.

On the other hand, your office, as we understand it, agrees to permit the sale of all Hebe bearing the old label now in the state of Ohio, which was shipped to May 1st last. We do not know what the exact amount is, but it is not large, because we have in this state only three distributing houses. These houses are the Monypeny-Hammond Company of Columbus, The Dall-Milliken Grocery Company of Washington Court House, and the Weakly-Worman Company of Dayton.

Will you kindly acknowledge receipt of this letter and confirm the correctness of this statement of the situation?

Very truly yours,

(Signed) Hubert B. Fuller."

9. On the twenty-ninth day of June, 1915, said Agricultural Commission of Ohio caused to be sent to The Hebe Company a letter approving the labels used by The Hebe Company, which letter is as follows:

"June 29, 1915.

The Hebe Company, Chicago, Illinois.

Gentlemen: Replying to your communication of recent date, we wish to advise that we have received the labels and the same are approved. However, we request that you send a duplicate of the labels in order that we

may include on same the approval of the department. One to be filed in this department, and the other to be returned to you.

Trusting to hear from you soon, and with best wishes,  
I am,

Yours very truly,

Bert Bartlow,  
Chief of Division.'

"10. The defendants, Norman E. Shaw, as Secretary of Agriculture of Ohio, and Thomas C. Gault, as Chief of Bureau of Dairy and Foods of the Board of Agriculture of Ohio, have served notice upon plaintiffs and their customers in the state of Ohio that said product 'Hebe' cannot be sold or distributed in the state of Ohio from and after the ninth day of July, 1918, and if after that date said product be found upon the market, said defendants will cause prosecutions to be brought against all wholesalers, jobbers, distributors and retailers selling, offering or exposing for sale the said product known as "Hebe" in the state of Ohio.

"This Stipulation of Facts is not intended to preclude either side from introducing oral testimony at the final hearing of this cause, which may be in addition to or an explanation of the foregoing facts, but no testimony shall be introduced to contradict any of the facts stipulated herein."

A. T. Seymour,  
Of Counsel for Plaintiffs.

L. D. Johnson,  
Solicitor for Defendants.

Before the introduction of any evidence relative to the composition or wholesomeness of "Hebe" the defendants interposed an objection to any testimony along these lines, upon the theory as stated by their counsel that such testimony was incompetent and irrelevant inasmuch as they contended that the Ohio statute prohibits the manufacture or sale of any product consisting in whole or in part of condensed skimmed milk. But the court ruled that such testimony should be received subject to defendants' objection as aforesaid, to which ruling of the court defendants, by their counsel, then and there duly excepted.

Clarence S. Stevens,

called as a witness on behalf of the plaintiffs, being first duly sworn, testified that he is 28 years of age and is an employe of and stockholder in the Carnation Milk Products Company; that in the past he has been also in the business of wholesaling dairy products, cheese and but-

ter and is engaged at the present time in these lines as well; that he has been in this business since 1895, when he succeeded his father in Cincinnati, Ohio, who was doing business at Cincinnati under the style of S. J. Stevens & Company, conducting a wholesale cheese and butter business; that the witness left Cincinnati in June, 1906, and went to Wisconsin.

That the witness was one of the co-inventors of the product known as Hebe; that in the manufacture of this product pure whole milk only is purchased from dairies which have been inspected by plaintiffs' field men; that within five (5) hours after the receipt of this milk at plaintiffs' plant said milk is skimmed and the cream which is removed is employed in making up the highest grade of creamery butter; that after the cream is removed and within five hours of the receipt of the milk as aforesaid, the skimmed milk remaining is combined by use of a secret process with pure cocoanut oil of the very highest grade obtainable and the resultant product is Hebe; that plaintiffs never skimmed milk from outside sources to make Hebe, but plaintiff buy the whole milk only. The finished product Hebe consists of evaporated skimmed milk and the cocoanut oil aforesaid and is of about the consistency of the evaporated whole milk; that the finished product Hebe contains no other ingredients than the evaporated skimmed milk and the cocoanut fat, and none of the food value of either of these ingredients is lost or impaired in the process of manufacture used in making Hebe and there is nothing in the process that would cause Hebe to be injurious or deleterious to health.

That when inventors started their experiments they tried to secure a stable emulsion in which the vegetable fat would stay suspended in the skimmed milk until it was used by the consumer; that they first started with different per cents of fat; that they found that certain per cents of fat would not remain in suspension, and by repeated experiments they finally arrived at six per cent. and standardized that as being the amount of vegetable fat that could be put into skimmed milk and make this permanent suspension which is a feature of the product; that the flavor of the finished product also had to be taken into consideration, because it was found that certain amounts of fat would produce flavors that were not desirable; that while this fat is neutral to start with, when it was processed and subjected to heat there was a tendency to develop flavors if the heat was not kept down to a certain temperature; that an excess amount of fat

above the standard above mentioned may produce this extra amount of flavors which are undesirable, and this is the reason why six per cent. of fat was fixed upon as the standard and as being the amount of fat which could be gotten to form the emulsion so as to be permanent, and at the same time make a nutritious food; that Hebe is one and eight-tenths per cent. short of the amount of fat which would be present if Hebe were made with cream instead of cocoanut oil; but nevertheless according to the Ohio standard which provides that whole, uncondensed milk shall have three per cent. of fat and twelve per cent. of solids, Hebe has six per cent. fat and twenty-four per cent. solids. (Note: This is twice as much in view of the evaporation of the water.)

That no product like Hebe was manufactured commercially before Hebe was put on the market; that the witness is familiar with various inventions in this country and Europe upon this subject and that he had a number of patents in his possession while testifying.

That cocoanut oil used in the manufacture of Hebe adds to the usefulness and value of the product as a food, since skimmed milk would have about 165 caloric values or heat units, and Hebe, this compound, would have at least 615 units; that is, if the fat were not in Hebe the condensed skimmed milk would have only about in the neighborhood of 330, but the addition of this fat brings it up to 615, which is within forty points of thereabouts of what evaporated whole milk would be; that these units are called caloric units, or heat units, but nevertheless nothing in the product of Hebe or the process by which it is manufactured is injurious or deleterious to health, since as the witness later says, the food value of the product does not depend on heat units, as these only give heat, but on proteins, carbohydrates and fats.

The witness further testified that the label now used upon Hebe, or as a matter of fact any labels that have ever been used on the compound in so far as they relate to the requirements of the State of Ohio, have never been of plaintiffs' own choosing; that the label before the witness is the evolution of opinions given verbally and by letter by various dairy and food commissioners of other states, and by the Bureau of Chemistry of the Department of Agriculture at Washington; that when Hebe was first put on the market the question of a proper label was submitted to counsel in an effort to start right; that a certain label was gotten up which was thought to meet the views of all the food officials; this label was put upon the package and the goods were sold; that in some in-

stances the original label met the approval of the various state commissioners, and in others it did not; that it was then realized that witness would have to get a label that would be approved by the Department of Agriculture in order to make interstate shipments; that a label was proposed which met the requirements of interstate shipments, but this label might meet objections from certain states; that it was then necessary to prepare a uniform label which could be used in all the states, and that involved quite a period of time and a great deal of thought to try to meet the views of these different officers and stand approved by everybody; that to the best of witness' knowledge and belief the plaintiffs propose to use no other label than the present one in the State of Ohio in the future; that one of their former labels was objected to by Mr. Strode, then Dairy and Food Commissioner of Ohio, and in order to meet his suggestions certain changes were made in the wording of the label. The phrase "For Coffee and Cereals, for Baking and Cooking," was suggested by food officials, including the Federal food officials at Washington. The witness has no knowledge of any retail dealer having sold Hebe representing it as condensed milk.

That the product was first marketed in February, 1915.

On cross-examination the witness testified that he is now an employe of the Carnation Milk Products Company and has charge of certain matters in the office; that he is not an employe of The Hebe Company which bought out the witness' old company; that The Hebe Company sells the product and the Carnation Milk Products Company makes the article called Hebe and makes the article called Carnation Milk, and the Carnation Company sells the product called Carnation Milk; that the function of The Hebe Company is to distribute the product Hebe and sell it; that the can of Carnation Milk in evidence (Plaintiffs' Exhibit 10) is marked as containing one pound, and the weight of the can of Hebe in evidence (Plaintiff's Exhibit 4½) is one pound; that witness understands that the caloric or heat units in Carnation Milk is about 655 or 660, and that the calories or heat units in Hebe is 615, and to the extent of this difference Hebe is lower in these units; calories or heat units do not make a food product valuable, it is rather the carbohydrates and proteins.

That a pound of butter fat is worth about thirty-seven cents; that the cocoanut oil put into Hebe is purchased from the American Cocoanut Butter Company and is worth less than butter fat.

That witness has some knowledge of the uses to which evaporated milk is put, and knows that it is often used as a substitute for cream and is also used as a substitute for fresh whole milk when diluted in a certain way, and is also used for cooking and to some extent for infant food when modified.

The witness says evaporated skimmed milk contains all the valuable ingredients of milk except the animal fat, and the fat only goes to make heat, so that outside of the heat all the building qualities are in evaporated skimmed milk; that three things make up food, proteins, carbohydrates and fats; proteins and carbohydrates are found in skimmed milk and the fat is supplied by plaintiffs' vegetable fat; that milk is an ideal emulsion when it comes from the cow; that the vegetable fat in Hebe bears the same relation to the skimmed milk that the butter fat formerly did; and the vegetable fat if not properly put in will rise to the top like butter fat, but is held in permanent emulsion by witness' process, but that witness' knowledge as to the food values of the different products is experimental and comes from marketing them; that he is not a chemist and only knows as to the comparative value of butter fat with vegetable oil from hearsay.

Howard Beatty,

called as a witness on behalf of plaintiffs, being first duly sworn, testified that he lives in Chicago, Illinois, and is connected with the American Coconut Butter Company, which is the company that furnishes the coconut oil to the Carnation Milk Products Company for use in Hebe. He stated that the dried coconut meat is imported by his company principally from the South Sea Islands. It is first received in dried form at the company's mill in San Francisco, and is there crushed and milled and the oil pressed from it. The oil is the coconut oil of commerce which, however, is inedible at that stage because of the decomposition that has taken place in the drying. The oil is then brought to Chicago and the decomposition removed, leaving the pure, fatty coconut oil, which brings it back to the original pure form in which it was in the fresh coconut, without albuminous matter, without color, without taste, one hundred per cent. fat, no free fatty acids and no volatile acids, and absolutely one hundred per cent. pure. The American Coconut Butter Company has its own agents in the South Sea Islands who make selection at the source to get high grade coconuts, and when the product reaches San Francisco there is an opportunity for further selection.

Witness further testified that the American Cocoanut Butter Company furnishes the finest quality of cocoanut oil that can be obtained to the Hebe Company. This oil is absolutely pure, every particle of it. It is absolutely the highest and finest quality that the American Cocoanut Butter Company deal in.

The production of cocoanut oil for edible purposes in American commerce is twenty years old. In the beginning it was nothing. It now amounts to about twenty-five hundred tons, or five million pounds monthly. At the beginning of the period the value was less than one-half what it is now because it was not understood. The quality of the oil was not understood, and its value not appreciated as it is now. It was at that time used for soap purposes.

Cocoanut oil is now used for edible purposes in the form that it is supplied to the Carnation Company, and it is used very largely in the manufacture of confectionery and biscuits, particularly of the better type. It is not a cheap fat; it is one of the highest priced fats they use. It is used because it has splendid keeping qualities. It does not become rancid, and it is used in fancy biscuits that must have keeping quality, and in fancy confectionery. The National Biscuit Company could not make the finest quality of biscuits such as "Nabisco" and other fancy confections of that kind until they found a fat suitable, and cocoanut oil is the fat they selected. About sixty million pounds of cocoanut oil a year is estimated to be used for edible purposes in the United States.

The witness further stated that he never heard the nutritious value of cocoanut fat questioned before. The fruit itself has been a staple article for hundreds of years, and in Europe the business has become a very important one. Here it is comparatively small. The witness stated that he knew of one firm in London that does in a week what this whole country does in a month, twenty-five hundred tons a week for edible purposes. It is a standard ration in the French army, and was in the German army before the war when they could get it. It is a fat that might be used as lard, and it is also churned with milk to make margarine, a substitute for butter to spread on bread. The witness stated that he had used cocoanut fat in his family as butter for nineteen years; that he has six children and the family uses it, and during the last year and a half his family had used no other fat. It is white, without coloring matter, although maid or wife in the kitchen can add color.

Witness further stated that as to the cocoanut fat furnished by his company to the Hebe Company, it is the finest quality that his company knows how to obtain, and that he knows of nothing in it that is injurious or unwholesome as human food.

On cross-examination the witness further testified that his company makes about four grades of cocoanut oil, but these are all of the same quality and differ only as to the melting point. The grade bringing the lowest price is used in biscuit factories and by confectioners. The second and third grades are also used in biscuits or as go-betweens in sandwiches or sugar wafer biscuits.

The witness further stated that the Carnation Milk Company are paying today seventeen and three-fourths cents per pound for the cocoanut oil purchased from the American Cocoanut Butter Company, but at the beginning of the war they were paying something in the neighborhood of thirteen cents. While they are paying seventeen and three-quarters cents per pound, the value of cocoanut oil is nineteen cents per pound. The contract for seventeen and three-quarters cents per pound was made about two months ago.

Dr. E. J. Wilson,

called as a witness on behalf of plaintiffs, being first duly sworn, testified that he has been engaged in practicing medicine continuously since 1882, and as a part of his work throughout his professional life he has studied questions of the digestibility and nutritious value and usefulness of animal and vegetable fats as human food. With reference to the product Hebe, the witness would say that there are two questions involved, viz.: First, the value of the skimmed milk; second, is it enhanced or impaired by the addition of cocoanut oil? Skimmed milk, of course, is practically the full value of the milk less the butter fat that has been removed. Practically all of the carbohydrates are there. Most of the salts are there and also the proteins. The addition of cocoanut oil in the measure of six per cent. is an effort to restore to that milk the butter fat that was removed. The use of cocoanut oil has been employed for a good while without injury as a wholesome food. There is no harm in its addition. The witness further stated that he could see no objection to the use of the combination as an article of food; that the cocoanut oil so used is very nutritious; in fact, quite as nutritious as the butter fat that was removed. The witness then read from Bulletin No. 505 of the United States Department of Agriculture issued in February, 1917. (Plaintiffs' Exhibit 7.) (But inas-

much as this bulletin was afterwards admitted as an exhibit we do not here set out the portion read by the witness.)

The witness further testified that the government bulletin above mentioned is universally regarded as a statement of scientific facts in the medical profession and relied upon as such.

Witness further testified that cocoanut oil as used in Hebe is no different from cocoanut oil used in any other preparation. The cocoanut oil is churned up and reduced to a condition of fine emulsion, which is Nature's method of combining butter fats with the foods that are taken into the stomach. Butter fat or any other kind of fat cannot be acted upon by any of the fluids of digestion until after it has been thoroughly emulsified, and is not acted upon until this emulsified condition is brought about. Therefore in the product Hebe, this cocoanut oil is in a condition in which it can be attacked at once by these digestive fluids, and need not be emulsified by churning in the stomach. Many of the animal fats have to be extracted from the combinations in which they are taken into the stomach, and even then many of them are not efficiently attacked, simply because they are difficult of separation.

The witness further testified that the addition of six per cent. of cocoanut oil to Hebe adds value to it that is very important and very necessary, and is a very healthful part of the food. It adds to the skimmed milk the fat that was taken from it by the removal of the butter fat, and add it in about the same measure, and a fat that actually measures up in the scientific tests to an availability of ninety-seven and nine-tenths as against ninety-six per cent. for butter.

The witness further testified that a well balanced ration is a ration that supplies to the body the elements of growth and energy and heat that are needed for the purpose of repair for the expenditure of energy for the utilization by heat, or for the development of heat. A well balanced ration is not necessarily a fixed formula for any one time of life. A well balanced ration for a babe would be a diet almost wholly of fats, because there is very little needed for the expenditure of energy. The babe needs temperature, the maintenance of just the life processes. For an adult in the active period of life a ration is required that will develop a large amount of energy as well as supply him with the necessary amount of fat for the temperature of the body, and he gets this largely from the carbohydrates and to some extent from fats.

In old age not so much of the carbohydrates are required.

The witness further testified that there is really no difference between vegetable fats and animal fats as a part of a balanced ration; the principle is the same if a vegetable fat is substituted for an animal fat, and this is shown by experiments made by the Department of Agriculture and by other experiments; and the witness stated that these experiments were consistent with what he had observed and with the authorities which he had examined. The witness testified that he knew of no objection to that portion of a ration which consists of fats being supplied by foods containing vegetable fats; that there are some reasons for believing that a vegetable fat is more available and less objectionable in some features than animal fat.

The witness further stated that the cocoanut itself has been used as a food from time immemorial, and that the fatty constituents of the cocoanut were a part of the nut itself, and hence a part of the food; but that they were not separated for the purpose of furnishing a substitute for butter fat until probably within the past twenty years.

The witness further said that Hebe combines the features and elements that ought to sustain life and provide for healthy growth, and that he could conceive of nothing in it that could have any injurious or deleterious effect. The witness also stated that the value of foods depends absolutely upon the condition and temporary needs of the person using them. The experiments of the Department of Agriculture show that the vegetable fat is used even more efficiently than animal fat; that there is no vital defect in the ration of a vegetarian if the vegetables will yield fat in a sufficient amount, and carbohydrates.

The witness further testified that the article contributed by A. E. Perkins in the bulletin of the Ohio Agricultural Experiment Station of December, 1916, (Plaintiffs' Exhibit No. 8) relative to the value of skimmed milk as a food is consistent with other facts studied and examined by the witness.

On cross-examination the witness further testified that the addition of cocoanut oil to Hebe creates a combination substantially like that of milk, the cocoanut oil being a vegetable fat instead of an animal fat. This is not based upon chemical analysis alone, but is based upon the demonstrable availability of such a product as a food in actual experience, and experiments have been conducted over a sufficiently long period of time to know

how it compares with whole milk or with butter fat; that the digestibility of cocoanut oil as compared with butter fat is ninety-seven and nine-tenths as against ninety-six; that one of the functions of these oils and fats is the production of heat, but they are also used in the generation of many other kinds of energy, as much as are carbohydrates. In the case of infants, they are unable to separate the fats from the vegetable foods or animal foods and must take it in a concentrated form, and hence they must get the butter fat from the milk; whereas adults can separate these fats from the combinations in which they are taken into the system; that the infant gets its fat in simple form combined with the milk; that there is nothing quite as good as mother's milk for infants, and that until recently the only substitute for mother's milk was animal milk; that a great many babes have been brought up on animal milk and until recently there has been no other way of giving an oil or a fat to an infant except that obtained from animals, but that now there are vegetable fats that will operate as an excellent substitute for butter, and cocoanut oil has been shown to be a very efficient substitute for fat; but the witness was not prepared to say that it has been used in infant feeding, but rather thought that it had not been so used; that the witness has not prescribed cocoanut oil for any babies, but has prescribed milk. The witness stated that he does not think he would prescribe Hebe to be given to a child instead of milk; that he does not think Hebe would be an infant food; that there is no way of determining whether or not Hebe would be a good food for infants except by actual experience or observation, and that has not been done; that the witness does not think Hebe has been used as a food for infants; that medical and chemical science has not advanced to that stage that it can be determined from the analysis alone what the full extent of the food value of a product is as applied to infants, because every babe is a law unto itself and there are some babes that never even take mother's milk, and cow's milk very often fails and is a very poor substitute for mother's milk.

The witness further stated that he believed that cocoanut oil is not generally used upon the table. The authorities who deal with it simply speak of it as having so many elements of caloric strength and that it is ninety-seven and nine-tenths digestible, and make no recommendations of it at all.

The witness further stated that the subject of nourishment is a very large subject, and is ever increasing; that

there is a very definite knowledge of how foods are acted upon by the body and utilized, but the knowledge of nourishment is not complete yet; that science works out the problem and then it is subject to experiments, and experiments are a very important way of studying the value of foods; that what the witness has said about cocoanut oil has to some extent application to the other fats and other vegetable oils, although these fats differ in that while they all contain certain elements these elements are more available in one kind of fat than in another; that cotton seed oil is in a class by itself and is very different from cocoanut fat.

On re-direct examination the witness stated that any milk that has been subjected to a high temperature is radically changed as a food. There are features of that food called vitamins that will be destroyed by the application of heat; that this is not completely accomplished by pasteurization, but is accomplished by sterilization.

The witness further testified that no condensed milk or evaporated milk is an ideal baby food although it may be in some circumstances, but would not be used as a matter of choice; that in the witness' opinion condensed milk and Hebe are much alike and he would not think that either would be classed as baby food.

Witness testified that Hebe is not strictly a compound, inasmuch as there is no chemical union between the elements, but that it is a mixture, just as whole milk is a mixture, of butter fat in the watery product of the milk. The witness would say that as between whole condensed milk and Hebe for infant food the one is as valuable for nutritive purposes as the other, but one is not as available as the other; that he thinks Hebe would not be as available because it lacks certain flavors; whereas condensed milk retains those flavors of the milk; but in other respects it would not be one whit different, and is just as nourishing. However, you could not get the baby to take it, although it would be almost as digestible as compared with milk. The flavor is so different from that of milk that the witness does not think it could be used as a substitute for infant food. In speaking of the nutritive quality of Hebe, the witness stated that he assumes that the fats in both are the same. However, in point of fact whole milk rarely has six per cent of butter fat, and as a rule it shows less than four per cent; and the witness stated that he thought the State insists that milk sold shall have at least three or three and one-half per cent

butter fat. In Hebe are found all the elements of milk save the butter fat; that is to say, milk, sugar, carbohydrates, and a very small amount of fat that is left in, and an effort has been made to add to that a fat that will measure up as nearly as possible to that which was removed, and the fat used is cocoanut oil which by experiments has been found to measure up fairly well. Witness further stated that his family used Hebe on strawberries, but the witness did not taste them and that he cannot use condensed milk on strawberries. The appearance of it was enough and that his preference is for whole milk on strawberries.

The witness further stated that the value of food as it comes to an infant does not depend upon the taste of the food to the child. He further stated that Hebe contains all the sugar that was contained in the whole milk, as removing the butter fat does not remove the sugar. Sugar is not a very large factor in a baby's diet at any time and constitutes only about six per cent of the diet, and more than that would cause fermentation; and in some cases less than six per cent of sugar is better, because there are some children who cannot take sugar in any large amount.

On re-cross examination the witness further testified that standard milk contains three and one-half per cent butter fat, while Hebe has six per cent of fat. Evaporation would not carry off any of the sugar. The lacto sugar of the milk is found in Hebe and in condensed milk just as it is found in whole milk, and the added sugar in sweetened condensed milk is that much more. There is a larger percentage of fat in Hebe than there is in standard milk, but there is not a larger percentage of fat in Hebe than there is in milk, the standard being three and one-half per cent. No reliance can be placed upon the sense of taste or instinct of a child in the matter of food. An infant will take food that is very deleterious and harmful.

L. A. Scarbrough,

called as a witness on behalf of plaintiffs, being duly sworn, testified that he is twenty-seven years of age; resides at Oconomowoc, Wisconsin, and is a chemist for the complainant companies; that he is acquainted with the method of manufacturing Hebe and has superintendence over the plant where it is manufactured; that Hebe contains no other ingredient except skimmed milk and cocoanut fat; that he has seen it manufactured and has analyzed it; that there is no chemical change occasioned by the process which combines the vegetable fat

with the evaporated skimmed milk; that he knows that Hebe is produced by a special process and that it is a pure product.

(At this point defendants by their counsel interposed an objection to the witness testifying as to the purity and wholesomeness of the product, inasmuch as the witness is not qualified as an expert on dietetics and no further questions were asked of the witness along that line.)

The witness further testified that in making Hebe by the special process mentioned, none of the food value of either ingredient is lost or impaired; that there is nothing in the method by which Hebe is made which injures the milk or the cocoanut oil.

On cross-examination the witness testified that the standard on Carnation condensed whole milk is seven and eight tenths of butter fat and twenty-five and one-half per cent of total solids; and in Hebe the standard is six per cent of cocoanut oil.

Charles F. Healy,

called as a witness in behalf of the plaintiffs, being duly sworn, testified that he is 48 years of age and is division sales manager for the Carnation Milk Products Company and for the Hebe Company; that said companies do not sell Hebe to retailers as a policy, although isolated sales to the retailer may have been made; that said companies sell to wholesalers, and the wholesalers then distribute the product; that the orders for Hebe are accepted at the general office, Seattle, Washington; that the traveling salesmen accept no orders in calling on the trade in Ohio; that Hebe is sold in at least twenty-five states.

The witness further testified (over the objection of defendants by their counsel) that the plaintiff companies placed the same reliance upon the approval of their label by the Ohio Agricultural Department in June, 1915, that they would be warranted in placing on the approval by the duly authorized authority of the state, and that they assumed the label submitted when it met with the approval of the Food Commissioner complied with the laws of the state; and that the plaintiff companies made an effort to do business in Ohio and sent their advertising and sales forces into Ohio and were quite successful so far as the volume of business was concerned, and made a profit from such business.

On cross-examination the witness testified that the Carnation Milk Products Company advertise Carnation condensed milk as an infant food, and that it may be

used for infant food when properly modified by a physician's advice.

It was admitted between counsel for plaintiffs and counsel for defendants that the package of forty-eight tin cans of Hebe sells for seventy-five cents per package less than the same size package of Carnation milk.

On re-direct examination the witness testified that the Hebe label (plaintiffs' exhibit No. 5), which is a duplicate of the label identified in the bill of complaint, is the label that was approved by Mr. Strode in June, 1915, and that no other label has been used in Ohio since that time; and that this is the only label under which Hebe is marketed anywhere.

Witness further testified that Hebe is manufactured in Wisconsin, and also in Seattle, Washington, and shipped to the 25 states mentioned, and maybe more, in the ordinary way in packages, just as shown by plaintiffs' exhibit No. 12, and the cans are in the form in which the retailer distributes them and sells them.

It was thereupon admitted by defendants through their counsel in open court that when the said food product (Hebe) is shipped into the State of Ohio it is contained in tin cans of two sizes, one holding one pound of said product, and the other holding six ounces; and each can bears the label as shown by the bill of complaint; that said cans labeled as aforesaid when shipped into the State of Ohio are packed in fibre shipping cases completely sealed and completely concealing said cans and the label thereon, each case of one pound cans containing forty-eight cans, and each case of six ounce cans containing ninety-six cans; that the shipping case exhibited in court (plaintiffs' exhibit No. 12) is used for the transportation of Hebe into the State of Ohio.

Thereupon the package containing the cans of Carnation Milk Products Company was marked as plaintiffs' Exhibit No. 11 and offered and received in evidence. This exhibit consists of a fibre shipping case containing cans of Carnation milk.

Thereupon, also, the package containing the cans of Hebe Company was marked as plaintiffs' exhibit No. 12 and offered and received in evidence. This exhibit is a large fibre shipping case containing cans of Hebe.

Thereupon it was further admitted by defendants through their counsel in open court that when Hebe is shipped into Ohio in less than carload lots, said fibre shipping cases are marked only with the name of the consignee and such other data as is necessary to insure proper identification of the product and delivery of the

shipment; but that when shipped in carload lots such cases are not marked with the name of the consignee; that when said shipping cases are received by a retail dealer in the State of Ohio, the individual cans, labeled with the label shown by the bill of complaint, are removed from said shipping cases by such retail dealer and exposed for sale on the shelves of said retail dealer as individual units, and in the great majority of instances are purchased by consumers one can at a time.

It was further admitted by defendants through their counsel in open court that Hebe is pure in the sense that there is no dirt or any impurity in it, or anything except skimmed milk and coconut oil, and that they have no evidence to show that there is anything in the way of impurities coming into it in the factory; and it is admitted by defendants through their counsel that the superintendent and the manager of the complainants' manufacturing plant who are present in court would, if called as witnesses, testify that the manufacturing processes are all clean and pure, and that the product Hebe when it comes through is tested and found to be clean and pure.

The witness further testified that he does not know whether the plaintiff companies make more money off of the Hebe than they make off of the Carnation milk.

John A. Wesener,

called as a witness on behalf of plaintiffs, being duly sworn, testified that he is 52 years of age and that his occupation is consulting chemist in research and medical science; and has been engaged in this work for about 25 years or more at Chicago, Illinois; that he has had quite an extensive experience in the examination of food products with reference to their digestibility and also with reference to their nutritious value and usefulness as a diet; that he has had such experience not only as a chemist and physiologist, but also as a doctor of medicine; that he has made feeding experiments on both men and animals, and has also studied the effect of food on the internal organs of the lower animals and also upon human beings; that he took his work as a chemist at the Michigan Agricultural College and the University of Michigan, graduating from the latter institution in 1888; that he took a degree in medicine in 1894 from the medical department of the University of Illinois; that he held the chair of chemistry in that institution for twelve years; that he was also professor of chemistry in the Pharmaceutical School of the University of Illinois for a short time and also in the dental school, which is now the

dental department of the Northwestern University located in Chicago, Illinois, that he is president of the Columbus Laboratories in Chicago and that he has been doing business there in research medical work and in food analysis and in toxicology ever since 1893; that the medical work is done for the physicians in different parts of the United States to aid and help them in making diagnoses from tissues and from excretions and secretions that they send in; that he is also a member of the executive staff of toxicologists of the Coroner of Cook County, Illinois; that he has also done some research work in the United States Agricultural Department, and also for the Experimental Station of Ohio on seed wheat to determine which was the best wheat to use to produce growth.

The witness further testified that he has analyzed the product Hebe; that he has a copy of his analysis.

Thereupon the witness' copy of his analysis of Hebe and also his analysis of Carnation Milk was offered and received in evidence and marked plaintiffs' exhibit No. 14, both of said analysis being on the same sheet of paper, and is in the words and figures following:

Exhibit No. 14.

Name: The Hebe Company.

Address: Chicago, Illinois. Date: 5-8-17.

Subject: 18299—Hebe for complete analysis.

18300—Carnation Milk for complete analysis.

	Hebe	Carnation
Fat .....	6.75%	8.55%
Proteins .....	6.60%	6.40%
Ash .....	1.75%	1.54%
Milk Sugar .....	10.20%	9.57%
<hr/>		
Water .....	25.30%	26.06%
	74.70%	73.94%
<hr/>		
	100.00%	100.00%
Acidity as Lactic Acid....	.84%	.72%

Thereupon a certain paper showing colored illustrations of the comparative composition of various milks was offered and received in evidence as plaintiffs' Exhibit No. 15, with the understanding, however, that the illustrations are not drawn absolutely accurate to the scale, but are substantially so; and it was admitted that if whole milk as shown on the illustration were condensed one-half like Hebe and Carnation it would show 630; and it is further admitted that Carnation milk as

shown on the exhibit is that of standard, or what is called Standard condensed milk.

Said Exhibit No. 15 is in the words and figures following:

Plaintiffs' Exhibit No. 15.



*Water*



*Fats*



*Protein*



*Ash*



*Carbohydrates*

*Raw Milk*



*Skimmed Milk*



*Hebe*



*Carnation Milk*



The witness further testified that he had heard the description of Hebe as read to Dr. Wilson, a preceding witness, when he was on the witness stand; that the witness is familiar with Hebe; that he has analyzed Hebe and that such analysis did not show the presence of any other ingredient except skimmed milk and cocoanut oil.

The witness further testified that cocoanut oil is of equal value and usefulness as butter fat in such a product as Hebe and is just as nutritious as an equal amount of butter fat, and is no more injurious or deliterious than butter fat.

The witness further testified that skimmed milk has a very high value and usefulness not only for building and sustaining life in so far as it is necessary for the body to have carbohydrates and proteins, but also from the standpoint of furnishing energy as well; that he has read the article on skimmed milk appearing in the bulletin prepared at the Ohio Agricultural Station (plaintiffs' exhibit No. 8) and that the facts appearing in that article agree with witness' knowledge, and that the facts given in that bulletin are about as well established with chemists as we are agreed that the sun rises in the east and sets in the west.

The witness further testified that the percentage of cocoanut oil found in Hebe not only constitutes a substantial element, but a very necessary element to produce a properly and correctly balanced food, because with all the good elements in skimmed milk, carbohydrates, mineral water and proteins, there must also be fat in order to have a correctly balanced food; that vegetable fats, at least the common ones that are used in foods, are of the same value as those from animals, but that there is one difference; namely, animal fat such as beef tallow and possibly mutton tallow are not quite as digestible because they have a higher melting point; and fat to be well adapted for human food should have a melting point somewhat lower than the temperature of the body; that vegetable oils are liquid, or semi-solid, and therefore as far as the physical properties are concerned, and assuming that the chemical properties are identical or in the same relationship with those found in animal fats the vegetable oils make the more ideal fats from a digestive and assimilative standpoint; that fats used as food are composed of glycers and acids called fatty acids and are combined in such a way that they form a salt and are known in chemistry, therefore, as Glycerins; that when a fat is treated with an alkali the glycerin is split off and the alkali takes the place of

what is left of the fat, of the glycerin, and that makes a soap, what is known as a soap; that the important glycerins in all fats and the common ones are what are known as stearin, palmitin, and olein found in beef tallow, mutton tallow and lard; that in lard the stearin is very small, and as stearin has the highest melting point, therefore it is that beef tallow and mutton tallow are solid at the ordinary temperature, whereas the lard which contains less of the stearin at the ordinary temperature is softer; that butter contains these primary glycerins; but in addition it contains some other glycerin known as laurin; that is, lauric acid combined with glycerin, myristic acid combined with glycerin, caproic acid combined with glycerin, capryllic acid combined with glycerin, capric acid combined with glycerin, and butyric acid combined with glycerin; that all of these except palmitin, stearin and olein and the lauric and the myristic are volatile and that when butter is put through a fermentation process a slight percentage of these free volatile fatty acids is liberated and gives the butter flavor; that the only vegetable fat known that approximates butter in this chemical composition is cocoanut fat, which has all of these fatty acids that are found in natural butter with the exception of butyric or butyric acid; that all the other volatile fatty acids that are so characteristic in butter are found to the extent of 25% in cocoanut fat, and therefore cocoanut fat in that respect simulates butter more than any other fat known; that the presence of 25% of these volatile fats does not mean the cocoanut fat is just 25% in value that of butter, but this has reference only to its chemical composition; that cocoanut oil has the same caloric value as butter fat, weight for weight, and it was the witness' purpose in describing volatile fats to go into the chemistry of the peculiarity of the fats of butter; that the presence of 25% of these volatile fats in cocoanut oil signifies that it is a fat which approaches nearer to the chemical composition of genuine butter than any other fat known; that the 25% applies only to the volatile fatty acids, and that as to the other elements the cocoanut fat would probably contain a higher percentage.

The witness would say that Hebe would be comparable with the evaporated milk, with the possible exception that Hebe has probably been processed a little higher than evaporated milk, and that accounts somewhat for its little more of a caramel color; and the odor of Hebe does not come from the fat, but probably comes from

something originating in the milk sugar contained in the skimmed milk; that a neutral fat has no odor and only begins to have an odor when the free fatty acids are driven off like in butter; that in the witness' opinion the odor of Hebe is due to the slight caramelization of the milk sugar.

The witness further testified that according to the tabulation shown on plaintiffs' exhibit No. 14, Hebe has 10.20% of milk sugar, and Carnation has 9.75% of milk sugar; that there is evaporation in both Hebe and in Carnation; that there is no added sugar in either.

The witness further testified that the difference between butter fat and cocoanut fat in reference to the variation of seventy-five per cent in the volatile acids has absolutely no effect upon the food value of the two fats, and that it makes no difference whether 75% more of the volatile fatty acids are present or not because, weight for weight, the value of the food would be the same and that the only figure the volatile acids cut is that if butter is the sort of a food product which is best adapted to man, then a product of the vegetable kingdom which discloses on analysis a similar fat nature, may rightfully be assumed to be equally as well adapted for human consumption as the actual butter fat; that it is not true that a good quality of butter will have properties that are not found in cocoanut oil; that the difference between cocoanut oil and butter fat is on the psychological side; that the looks, taste and smell of a product adds to the enjoyment and gives rise to a physiological action on the gastric juices and digestive fluids; but eliminating this psychological effect the same food value can be obtained from fresh, white, unsalted butter as from a butter that possibly would stimulate the appetite and digestive juices more; that as far as nourishment is concerned the one would be just as good as the other; that a baby has absolutely no taste and will eat things that are offensive to an adult.

Witness further testified that the palatability of butter is something that has been put there simply a matter of bacteriology, that butter is made from cream which has been treated with what is called a starter to inoculate it and start a growth in it; that is, there is a lactic acid formed and that precipitates the cheese or the casein and then the butter is worked out of this fermented mass and what is left is the buttermilk; that a certain amount of buttermilk and of this fermented product enters into the finished butter fat; that after that salt is added to flavor it; that the bacteria present act

upon these volatile fatty acids and this starts a little of the free fatty acids which give it that palatable flavor; that if cocoanut fat is treated in the same way the result will be nearer to the butter flavor than could be obtained from any other oil, and then if it were colored and put through the same process as butter, the result would be fairly good tasting butter because it has those same elements in it which are amenable to the same fermentation processes through which butter fats go in order to make butter; that oleomargarine is treated in the same way to make it palatable.

The witness further testified that so far as he has been able to ascertain in all of his research work and from the reading of literature, vegetable fat will sustain life to the same extent and the same degree as the best animal fat; that a product like Hebe containing 6 per cent of cocoanut oil and 94 per cent of evaporated skimmed milk will certainly sustain life and produce growth to the same extent as whole evaporated milk will do, providing it is of the same concentration so that pound for pound there would be just as much nourishment obtained from Hebe, providing it had the same chemical analysis as to the amount of fat, carbohydrates and proteins, as would be obtained from whole milk; that if Carnation milk only had six per cent fat and the carbohydrates were the same as in Hebe, then pound for pound the food value would be exactly the same; that the comparative value of cocoanut oil and butter fat for life sustaining and nourishment and growth are practically the same, although a vegetable fat such as the cocoanut oil is slightly more digestible; that the human being can use vegetable fat of this nature as efficiently as it can use animal fat for sustaining life.

The witness further testified that Hebe is as fit for infant food as condensed whole milk or evaporated whole milk.

On cross-examination the witness testified that there are no qualities present in natural butter fat necessary for the growth of an infant which are not found in Hebe.

The witness further testified that cotton seed oil is just as highly digestible as butter fat, and is so accepted by all leading authorities of the world; and that it is just as nutritious; that both cotton seed oil and cocoanut oil are just as nutritious and just as digestible as butter fat, and this proposition is accepted by all leading authorities; that the same thing is true of olive oil, corn oil, peanut oil, and possibly rape seed oil; that so far as efficiency and economy from a nutritional standpoint

is concerned, they are the same as butter fat, but they are not the same in their physical properties.

The witness testified that butter fat differs from all other animal fats such as tallow, beef tallow, mutton tallow and hog fat, in the fact that it has these lower fatty acids known as volatile fatty acids which, when they are split off from the glycerins, can be volatilized by distillation, whereas the other fats known as palmitin, stearin and olein will not distill at low temperatures; that coconut fat has about twenty-five per cent. of these particular fatty acids which are characteristic of a butter fat; that these volatile fatty acids are of no more value from a nutritional standpoint than are the fatty acids of the higher melting point such as stearin, palmitin and olein; that the only effect of these volatile acids is that the bacteria will act upon the glycerids that have these volatile fatty acids and liberate a small trace of them, thereby giving the butter flavor to the fat, and this is a factor in making the product somewhat more palatable; but from a nutritional value there is no difference; that these volatile fatty acids are found not only in the milk of a cow, but in the milk of other animals.

Witness also testified that usually a baby has no taste and will take cod liver oil and castor oil, which are not palatable to an adult; that a baby has not the taste so as to detect a bitter substance; that the sense of taste is not very highly developed in an infant.

The witness further testified that he was first retained by the Hebe Company and Carnation Milk Products Company a week previous to giving his testimony; that he testified in the oleomargarine case in this court; that he has examined quite a number of fats that were substitutes for butter fat and has done quite a bit of work in that line.

On redirect examination the witness testified that he had fed hundreds of babies that could not take mother's milk, or milk of any kind; that he had also analyzed thousands of samples of breast milk and had also fed young animals; that he had helped to raise young mountain lions on buttermilk at Lincoln Park, Chicago; that it is very hard to raise young mountain lions in captivity because they die of rickets; that Dr. Evans, in association with the witness, used to make all the post-mortem examinations at Lincoln Park of the animals that died, examining everything from a baby elephant to a boa constrictor; that these young lions that are born every year would seem to get along all right and then suddenly develop rickets, getting a tremendous, ugly

looking head, and a terrible paw paralysis, due to the fact that the spinal column broke down and these young animals died of the rickets; that finally it was decided to tie down the mother and get some of her milk, and when this was analyzed it was found that the rickets was due to the milk; that the right kind of a milk compound from cow's milk was then made up and these young mountain lions were brought up on this modified milk and there was no trouble in raising them; that then the diet of the mother lioness was changed and fat added, and also a small amount of carbohydrates, and after that the mother lioness produced good rich milk and was able to raise her own young; that he has had a lot of experience with infants in association with Dr. Christopher, who was probably one of the most celebrated baby specialists in Chicago; that they sometimes found infants to whom milk of any kind is a deadly poison; that the witness had analyzed mother's milk that had a perfect chemical composition and yet the mother's baby was poisoned by it; that such a baby when placed on the breast of a wet nurse, the analysis of whose milk was identically the same as that of the mother's milk, took that milk of the wet nurse and it agreed with it and it thrived; that the witness had treated babies to whom milk of any kind was a deadly poison, and that in such cases he would have to feed them on barley water or other food and take away all the milk until the trouble ceased, and then, of course, the baby would come gradually back to milk; that in some cases in his experience he found that about the only thing he could feed a baby was this Eagle brand of condensed sweetened milk, and that he knew of no law in nourishment why it worked, but only knows that it did work and that the baby thrived on it.

The witness further stated that whole cow's milk would not be a fit food for an infant over a long period of time, for the reason that such milk is too high in proteins and these proteins in cow's milk are of a different nature to the protein of mother's milk; that whenever the gastric juices and acids of the stomach act upon cow's milk it produces great, big, lumpy curds, whereas on mother's milk it does not produce curds, and that therefore cow's milk in order to be fed to a baby over a long period of time should be modified in such a way as to reduce the protein valuation in it and if possible modify it in such a way that the ratio of one part of lactalbumen to one part of casein is obtained instead of three parts of casein to one of lactalbumen.

Witness further testified that it is largely through the

first year of an infant's life that its taste is indifferent to the kind of foods that are given to it.

The witness further testified that upon the basis of Hebe containing 615 calories and Carnation containing 655 or 660 calories, the Carnation would naturally have a little higher caloric value than the Hebe, because the former is higher in butter fat; not because it is butter fat, but because it is higher in fat; that if there was as much cocoanut fat in Hebe as there is butter fat in Carnation, the caloric value of the two would be the same.

Curtis C. Howard,

called as a witness on behalf of the plaintiffs, being duly sworn, testified that he is by profession an analyst and has been engaged in that work for thirty-nine years; that he has taken the Bachelor's and Master's Degree from the State University (of Ohio) and that he is also a graduate student of Johns Hopkins and the University of Berlin; that he has been teaching for 39 years in the Starling Medical College, the Ohio Medical College, and has also taught for a short time in the College of Medicine in the State University; that his work has not lain so much in the direction of ascertaining and determining the digestibility and nutritious value of fat in human food, but that his work has been chiefly in the direction of pharmaceutical, medical and toxicological work; that to some extent he has had experience as a food analyst.

The witness further testified that he has made an analysis of the product Hebe and found it to contain 6.17 of fats and 24.61 per cent of total solids; that he understands what Hebe is manufactured from; that cocoanut oil in a product like Hebe has practically the same nutritive value and the same digestible value as butter fat or any of the other oils; that the skimmed milk in such a product as Hebe contains all the carbohydrates and most of the proteins of whole milk, and therefore has the value of the whole milk as regards these; but has a very small amount of butter fat left in it; that the addition of 6% of cocoanut oil to a product like Hebe would have the effect to restore the nutritional value which has been removed by the abstraction of the butter fat; that by the process of combining the cocoanut oil and the skimmed milk to make Hebe no chemical change takes place and there is no loss of food value of the elements; that from the standpoint of a well balanced ration for human consumption the nutritive value and digestible value of a food containing vegetable fat are practically the same as a food containing animal fat;

that both products in a general way have the same nutritive power to furnish the source of energy and heat producing qualities; that foods containing vegetable fat have the same heat value and the same energy producing value as fats of animal origin; that the witness has had only a limited time in which to study the product Hebe, but that he has been unable to imagine any direction in which there could be anything deleterious in character in Hebe; that he has seen no such indications. Witness testified further that there is no chemical combination of the ingredients composing Hebe, there is no compound, because all that proteids and carbohydrates or proteins and fat make is a mixture, and when you take proteins and carbohydrates out of skimmed milk and add a vegetable oil it makes a mixture.

On cross-examination the witness testified that as related to the presence of equal quantities of butter fat and of cocoanut oil, the nutritional values are so nearly the same that there would not be any difference in the life sustaining quality or the nutritive value of these two; that he regards the growth promoting value of such a food as directly related to its nutritional value, and that this is known to be true as a scientific fact; that this proposition cannot be exclusively established through scientific processes, but that the best way to determine it would be by feeding experiments upon animals to determine the growth; that in laying down the proposition that the growth promoting value is the same, the witness took into consideration not only scientific conclusions, but also the various sources of information based both upon scientific facts and practical study of the food values of these substances as determined by the calorimeter and as illustrated by feeding to animals; that whole milk has a higher food value than skimmed milk, because of the nutritional value of the fats which the former contains, and these fats are a very necessary element in human life, and if they do not come from the milk they must come from some other source; that cocoanut oil does not have the same chemical elements as butter, in that the latter contains different glycerids; that the cocoanut oil does not run as high in glycerids which yield the volatile fatty acids as does butter fat; that he is not familiar with the figures as to these volatile fatty acids given by the preceding witness (Dr. Wesener); that he does not say that the glycerids are not an important part of the nutritive value of foods; that practical experiments are necessary to

determine the nutritional value and so on, which chemistry can not do; that he only knows in a general way that the glycerids of the volatile fatty acids are not as high in cocoanut oil as they are in butter fat, and that one of the glycerids, namely: butyrin is lacking in cocoanut oil, and that butyrin is the chief glycerid of the volatile fatty acids in the butter fat; that he would not say that these glycerids are not the important part of the nutritive value of foods, but that the nutritive value of food is based not on the volatile fatty acids, but on the total glycerids in the two products; that feeding experiments would be necessary to determine whether what the cocoanut oil lacks in the glycerids mentioned is made up by an excess in other glycerids; that for certain results feeding experiments are to be relied upon rather than chemistry; that chemistry is making very rapid advances, but probably will never be used to determine those facts which must now be determined by experiments because it is a different source of investigation; that the knowledge of the nutritive value of these different glycerids is not derived from a knowledge of the proportion of these that are present in different fats as determined by analysis, but rather from the methods of the calorimetry and the methods of feeding; that chemistry alone will not give all this information; that calorimetry is rather related to physics than to chemistry.

The witness further stated that after the butter fat has been taken out of milk the nutritive value may be restored by the insertion of cocoanut oil, and thereby make just as good a food.

Charles F. Healy, recalled as a witness on behalf of plaintiffs, testified that the plaintiff companies have at all times sold Hebe as "Hebe," and not as milk; that they distributed Hebe through wholesale grocers; that to the best of the witness' knowledge no wholesale grocer has sold Hebe other than as "Hebe"; that the witness has heard of retail grocers who at times sold Hebe as milk, just as some persons might sell some other coffee as "Reo" coffee, or corn syrup as "molasses"; that witness has written to plaintiffs' salesmen and instructed them that the best future for Hebe was to sell it for what it is as a new food product, and not as milk; that the witness has repeatedly instructed all of plaintiffs' selling representatives that Hebe is a milk compound and must be sold as such, and that he has no knowledge that it was ever sold by the plaintiffs or by their salesmen as other than Hebe or as a compound.

On cross-examination the witness stated that in August, 1916, the Monypeny-Hammond Company was a jobber and distributor to which plaintiffs sold Hebe.

Thereupon plaintiffs by their counsel offered in evidence two certain letters to the introduction in evidence of which letters defendants by their counsel then and there objected, on the ground that such letters are not relevant and that no official of the state has the right to bind the state, and that knowledge of the law is presumed on the part of the plaintiffs. The Court ruled that said letters might be received in evidence subject to the objection, and thereupon said letters were received in evidence and were marked plaintiffs' Exhibit No. 16 and plaintiffs' Exhibit No. 17.

Said Exhibit No. 16 is in the words and figures following, to wit:

July 21, 1916.

Dr. C. L. Alsberg,  
Chief of Bureau of Chemistry,  
Department of Agriculture,  
Washington, D. C.

My Dear Doctor:—

This office has before it for consideration the question of the sale of "Hebe," which according to the label under which it is sold is "A compound of evaporated skimmed milk and vegetable fat."

I am enclosing herewith a copy of the label and will ask you to be kind enough to advise me, if you can, as to what information you have concerning the classification of this article; i. e., is it in your opinion a compound, or is it a condensed or evaporated milk? Any other information concerning the matter which you may be able to furnish will be greatly appreciated.

Respectfully,

(enclosure)  
JGP/Mc/

Edward C. Turner,  
Attorney General.

Said Exhibit No. 17 is in the words and figures following, to wit:

Price

Department of Agriculture,  
Bureau of Chemistry,  
Washington, D. C.

Address Reply  
Chief, Bureau of  
Chemistry, and  
refer to  
FILE 221

Received  
Aug. 4-1916  
Attorney-General  
Aug. 2, 1917.

Hon. Edward C. Turner,  
Attorney General,  
Columbus, Ohio.

Sir:

Replying to your letter of July 21, 1916, there is enclosed a copy of Food Inspection Decision 158, containing a definition adopted by the Department for condensed milk, evaporated milk, or concentrated milk. Articles which do not conform to the definition are regarded as not being entitled to be designated as condensed milk, evaporated milk, or concentrated milk.

The Bureau is informed that Hebe is a mixture of evaporated skimmed milk and cocoanut fat. It is considered to be a compound within the meaning of section 8 of the Food and Drugs Act, in the case of food, second subdivision of paragraph fourth, which provides that an article of food which does not contain any added poisonous or deleterious ingredients shall not be deemed to be adulterated or misbranded—

In the case of articles labeled, branded, or tagged so as to plainly indicate that they are compounds, imitations, or blends, and the word 'compound,' 'imitation,' or 'blend,' as the case may be, is plainly stated on the package in which it is offered for sale; x x x

Respectfully,

Enclosure:

Cir. 21.

W. P. Jones,  
Assistant Chief.

(It was stipulated in open court that the date of plaintiffs' Exhibit No. 17 should be August 2, 1916, in lieu of August 2, 1917, the latter date being a clerical error).

Plaintiffs rest.

Arthur W. Reynolds,  
called as a witness in behalf of the defendants, being duly sworn, testified that he resides at 920 Franklin Avenue (Columbus, Ohio); that his occupation is that of contractor; that he was a major in the Quartermaster's Department at Camp Willis, near Columbus, Ohio, in August, 1916; that in his capacity as major in the Quartermaster's Department he was connected with the letting of contracts; that Monypeny-Hammond Company made a contract with witness for the furnishing of certain materials.

Q. (By Mr. Pretzman). I will ask you whether preliminary specifications were sent to the Monypeny-Hammond Company as well as to other companies?

A. I think so, yes.

Q. Have you a copy of those specifications?

A. Yes, sir.

Thereupon the witness produced the said specifications and same were offered and received in evidence as defendants' exhibit "A", and the fifth paragraph of said specifications read as follows:

"MILK, evaporated: unsweetened, pint cans, 48 to case. Specify brand."

Q. (By Mr. Pretzman): Now you may tell the Court whether the Monypeny-Hammond Company furnished an evaporated milk under and in pursuance to that arrangement.

A. They did, yes.

Q. If you know, what kind of milk was it they furnished?

Mr. Seymour; (for plaintiffs.) We object on the ground that the Monypeny-Hammond Company if they did anything illegal are responsible, and not the plaintiffs, and that their acts are not binding upon the plaintiffs.

The court ruled that said evidence should be taken subject to objection.

A. Well, if I am not mistaken, they furnished two or three brands of milk.

Q. I call your attention to a brand named Hebe and ask whether any milk of that kind was furnished by them?

A. Yes.

Q. How much, if you know?

A. I could not say as to that.

Q. A large quantity?

A. I think, if you will allow me to refresh my memory, I think we called for about 1500 cans at a time (after consulting memoranda)—Yes, 1562 one pint cans. Now we asked for that. That was supposed to be—we anticipated that as being five days' supply. About every five days we asked for proposals on that amount of milk.

Q. But you can't say about what quantity of Hebe was sent there?

A. No, I can't.

Q. What was done with the Hebe that was sent there?

A. It was placed in the storeroom and issued.

Q. Was all of it used?

A. I think all of the first lot was issued.

Q. What as to the second lot?

A. Before the second shipment was issued I think there was a protest against it and it was returned.

On cross-examination, Mr. Seymour (for plaintiffs) asked the following question and obtained the following answer:

Q. Did you look at it when it was delivered?

A. No, I can't say that I did.

Mr. Seymour: I am in just a little unfortunate position; if this is irrelevant I don't want to cross-examine and make it relevant; but if your Honors will permit my cross-examination in order to get the truth, subject to its all being ruled out on our motion, I would be very glad to go ahead.

Judge Warrington: It might be that some of it would go out and some of it would remain. I can't tell in advance.

Mr. Seymour: Well, I don't believe I want to cross-examine at my peril. I will not ask him any questions.

**Edwin James,**

called as a witness on behalf of defendants, being duly sworn, testified that he resides at Glenroy, Ohio; that he is inspector for the Ohio State Board of Agriculture; that he is familiar with the product known as Hebe; that on May 11, 1917, he went into Schreiber's grocery store, Ironton, Ohio, and asked the lady clerk if they had any condensed milk; that she stated that they had the Hebe brand, and witness then said "That will do. Give me two cans." That she gave him two cans and he asked the purchase price and she said fourteen cents; that he paid her for it and she wrapped it up and he left with it; that on the same day he went into Smith's grocery store, East Ironton, Ohio, and asked him if he had any condensed milk; that he said "Yes, sir;" that the witness then said "What brands have you;" that the storekeeper named over two or three different brands and said "I have Hebe also, no use of my denying the fact, for you see it;" that the storekeeper had Hebe on his lower shelf; that the witness purchased two cans and paid ten cents.

All the evidence of this witness was received subject to objection of complainants on the ground that if these retailers did anything unlawful or made any misrepresentations, they alone are responsible because there is no way of preventing every man who is conducting a grocery store from doing something wrong, and all this line of testimony was objected to by plaintiffs through their counsel before any such testimony was introduced. But the court overruled said objection and allowed the evidence to be received, to which ruling of the court plaintiffs, by their counsel, then and there duly excepted.

Thereupon defendants offered in evidence a certain part of the issue of the "Columbus Citizen" of Friday, April 21, 1916, showing the advertisement of the Fulton Market Company, Town street and Fourth street, and the record shows that the total advertisement of the Fulton Market is about four inches wide and six inches long, and the part that refers to Hebe milk consists of only three lines in the corner and in small type, and reads as follows:

"Hebe Milk. Large regular 10c cans, Saturday, 2 cans 15c."

Plaintiffs thereupon objected to the introduction of said advertisement in evidence, on the ground that same is irrelevant, incompetent and immaterial and cannot bind the plaintiffs, but the court ruled that said advertisement should be received in evidence subject to plaintiffs' objection as aforesaid, to which ruling of the court complainants, by their counsel, then and there duly excepted.

John L. Hutchinson, called as a witness on behalf of defendants, being duly sworn, testified that he is instructor at the Ohio State University, and has been such since September, 1914; that he is a member of the Department of Agricultural Chemistry, which is the College of Agriculture; that he teaches there; that his line of business is connected with dairy chemistry and with food and nutrition; that he is familiar with the product known as "Hebe;" that he has had it in his possession. The first shipment was about June 10, 1916, and the second in January or February, 1917.

It was thereupon stipulated between the parties hereto through their respective counsel in open court that inasmuch as Plaintiffs' Exhibits Nos. 1 and 2 will spoil, plaintiffs may, at any time when needed in this court and in a reviewing court produce duplicates substantially the same which may be regarded as the originals of Exhibits 1 and 2.

The witness further testified that the first shipment which he had of Hebe was a little different from Exhibit No. 4 $\frac{1}{2}$ , and was in six-ounce cans, and the labels were a little different in that the phrase on the smaller cans, "for coffee and cereals, for baking and cooking," was eliminated, and in lieu thereof appeared the statement that you would like it better than milk; that in the other shipment the cans were the same as in Exhibit No. 4 $\frac{1}{2}$  and bore exactly the same label.

Witness further testified that the first shipment of

Hebe which he obtained was fed to experimental animals to test out its nutritive value in comparison with the condensed skimmed milk, the condensed skimmed milk used being the "Everyday" brand purchased from the John Wildi Company; that these experiments were conducted upon white rats; that these animals were used because they were more available at that time, and because they live upon practically the same kind of foods that a human will; and further because they are small animals and do not require as great a volume of food to conduct the same experiments, and the digestion, the nutrition is practically the same as it is in a human; that the experiments were conducted upon a dozen rats on each brand of milk; that is to say, a dozen animals were fed upon Hebe and a dozen upon the "Everyday" evaporated milk, which is condensed whole milk; that the first series of experiments was run eight weeks, and then was duplicated; that the results of the first experiment were that in feeding these two brands of milk a difference was noticed in the disposition of the animals—a difference in weight; that is, of the animals on one milk and the animals on the other; and also a difference in the state of health of the animals was noticed; that on an average the animals fed upon "Everyday" milk made a gain of about 25% over the ones fed upon Hebe; that the health of the animals could only be judged by the appearance and actions, and that in nearly every case it was noticed that the animals fed upon the Hebe were subject to infections and that the appearance of the hair of these animals was not smooth and slick like a normal rat; that in one case this last result was noticed upon the group fed on condensed milk, but only one was affected out of the twelve, while it happened with about five or six of the group fed upon Hebe; that these infections were caused by parasites that appeared upon the ears and nose and around the eyes of these animals causing sores in a scale form, and this was noticed more with the Hebe animals than with the condensed milk animals; that these two groups of animals were picked from the same litter; the same age, and as nearly the same weight as possible, and there was very little difference in the animals to begin with; that neither group of animals lost weight, but the Hebe group did not make the gain that the others did; that the infected rat in the "Everyday" group died and that there were perhaps one or two others that had a small amount of infection in the "Everyday" group, but not in general; that five or six of the Hebe group showed infection.

Thereupon counsel for defendants asked the witness the following question:

Q. Professor, when you notice susceptibility to infections that way what does that indicate?

Thereupon plaintiffs, through their counsel, objected to the witness answering the above question on the ground that he has not been qualified, and with the court's permission counsel for plaintiffs examined the witness as to his qualifications; and the witness testified that he is twenty-five years of age; that he took his degree of Bachelor of Science at the Kansas State Agricultural College and took his Master's degree at the Ohio State University; that he studied in the branch of agricultural chemistry principally; that in the undergraduate work he studied the physiology of human beings; that he did not study pathology, and has not studied pathology of animals as to diseases; that he has studied bacteriology, but has not studied it with reference to diseases; that he knows the digestive system of a white rat is practically the same as that of a human being; that he has never examined the stomach contents from a human being and has never made any dissection of the human stomach; that the human gastric juice contains four-tenths of one per cent. hydrochloric acid and contains a protein fluid, the exact percentage of which he does not know, and that it also contains digestive enzymes; that in his undergraduate work he took one year on the subject of physiological chemistry which involved the digestion of the stomach, and that he has studied this subject ever since he has been at the University, and this is his third year at the University; that to start with, the rats subjected to the experiments were young rats; that young rats normally will develop to fairly large size in from five to six months; that these rats weighed from thirty to forty grammes each to start with, which would be about the size of an ordinary mouse; that to commence with these rats were about four or five weeks old; that he does not know what the ordinary age limit of a white rat is; that he knows of one such rat that lived over a year; that he knows nothing as to the age limit of an ordinary rat; that his study of these animals has been very limited as to the length of their lives; that in experimental work parasitic diseases in white rats are taken to indicate mal-nutrition; that out of general experiments (other than experiments with Hebe) conducted on two or three hundred by the witness probably one-fourth of these animals had parasitic developments in a more or less degree; that all of

these animals had not been under the direct personal observation of the witness and he did not have control of the experiments.

Thereupon the court ruled that the witness was qualified to answer the question and that the objection of plaintiffs went rather to the weight of his testimony, to which ruling of the court plaintiffs, by their counsel, then and there duly excepted.

The witness further testified that in speaking of the disposition of the experimental rats, he meant the friendliness of these rats in handling them; that he noticed that the Hebe rats were more apt to bite than the ones that were fed on "Everyday" milk; that white rats fed upon an adequate diet are generally pretty tame and are more or less of pets; but if they are given an inadequate diet they are not so tame; that one of the "Everyday" rats died during the experiment, and that the witness thinks that five died on the other side; that the Hebe rats were probably inferior in general appearance to those fed upon the "Everyday" milk.

Thereupon plaintiffs, through their counsel, moved to strike out the statement of the witness as to the comparisons of the general appearance in the two groups of rats, on the ground that said statement was a mere conclusion of the witness, but the court denied plaintiffs' motion to strike out said testimony, to which ruling of the court plaintiffs, by their counsel, then and there duly excepted.

The witness further testified that they made a second experiment which was carried on at exactly the same time as the first experiment, but upon a different group of rats; that this second experiment was a comparison of butter fat with cocoanut oil; that in his second experiment the diets of the two groups were exactly alike with the exception that in one group the fats in the diet were supplied by butter fat, whereas in the other group the fat was supplied by the same percentage of cocoanut oil; that in this second experiment the cocoanut oil was fed to eight rats, and the butter fat to seven rats. This discrepancy in numbers being due to the fact that an insufficient number of rats was available at that time; that the results of this second experiment were more marked than the results of the other experiment, in that the average gain in weight of those fed upon the butter fat was between thirty and thirty-three and one-third per cent. greater than those fed upon cocoanut oil; that in other particulars the same things held true in the second experiment as in the first, with the difference

that the animals on the butter fat ration were in better condition than those upon the "Everyday" milk; that the animals fed upon the cocoanut oil made a growth, but that several of these animals were lost and had to be replaced; that after the experiment had been continued for three or four weeks three rats out of the eight were lost and had to be replaced; that no rats were lost on the butter fat ration; that the rats fed upon the butter fat ration were, judging from appearances only, probably a little healthier than the ones fed upon the cocoanut oil.

Thereupon counsel for defendants propounded the following question to the witness:

Q. Now, Professor, how far would you say the experiments on these rats would be a guide in determining the effect of the same experiments on infant life?

Thereupon plaintiffs, by their counsel, objected to the witness answering the above question on the ground that the witness is not qualified to give expert opinions upon the subject; and in response to questions propounded by the court upon this objection, the witness testified that he is not qualified to testify as to diseases, but that he thought he could speak with accuracy as to the nutritional side of it; that he has had no experience with infant life, and that the only thing that he can say is that the experiments on animals are used as a guide with the infant; that when it comes to dealing with the child itself the witness has had no experience whatever; that it is generally considered that the same would hold true, or the same result would be obtained, in feeding human beings as in feeding the lower animals, and that the witness bases this statement upon the fact that the same constituents are essential for the support and development of growth in the human that are essential in the animal body.

Thereupon the court ruled that the witness was qualified to answer the question objected to, to which ruling of the court plaintiffs, by their counsel, then and there duly excepted.

Thereupon counsel for defendants stated that the witness had answered the question in the course of his examination to test his qualification, and no further answer was given by the witness.

Thereupon defendants, by their counsel, propounded the following question to the witness:

Q. Now, Professor, I will ask you to state what in your opinion would be the result if an infant were fed exclusively on the product known as Hebe?

Thereupon plaintiffs, through their counsel, objected to the witness answering the above question, and the court ruled that the witness had not established sufficient qualification to answer said question, to which ruling of the court defendants, by their counsel, then and there duly excepted.

Thereupon, defendants, by their counsel, propounded the following question to the witness:

Q. You may state what, in your opinion, would be the result if a rat such as you have described were fed continuously on the product known as Hebe.

Thereupon plaintiffs, by their counsel, objected to the witness answering the above question, and the court ruled that the witness had not shown sufficient qualifications to permit him to answer said question, to which ruling of the court defendants, by their counsel, then and there duly excepted.

The witness further testified that he had carried on experiments with butter fat and other fats; that he is familiar with the literature upon the subject of other fats in their relation to butter fat.

Thereupon defendants, through their counsel, propounded the following question to the witness:

Q. I will ask you to state as the result of your investigations whether any vegetable oil has ever been discovered which contains the nutritive and growth-producing qualities of butter fat.

Thereupon plaintiffs, through their counsel, objected to the witness answering the above question, on the ground that he had not shown sufficient qualifications; but the court overruled said objection, to which ruling of the court plaintiffs, by their counsel, then and there duly excepted. Thereupon the witness gave the following answer:

A. In my looking up the literature on the subject, I have not found any vegetable oil that will equal butter fat in producing so-called vitamins, or growth producers.

On cross-examination the witness testified that in the first experiment conducted with Hebe and "Everyday" milk there were twelve rats in the "Hebe" group and ten rats in the "Everyday" group; that this experiment was conducted from the first day of June, 1916, over a period of eight weeks to the middle of August, 1916; that one of the "Everyday" rats died, and five of the "Hebe" rats died; that the average gain made by the Hebe rats was about forty grammes; that he has not the data at hand to show the growth of each individual

specimen; that each rat was in a cage by himself; that the witness is unable to say how much Hebe was consumed each day by each rat; neither can he tell as to the amount of "Everyday" milk consumed by each rat; that no data was kept as to the amount; that the data only shows the date that they were fed; that the rats were fed from a pan which was filled at regular intervals; that these pans were practically the same size and were kept full so as to keep food before the rats all the time; that the witness cannot tell at all how much of the Hebe any one of these animals consumed during any different space of time as compared with the others, but that the food was kept before them constantly; that no account was kept of the weight of the food put into the several cages; that the witness has no opinion at all as to the amount that any of these rats consumed during any period of time; that when the pans were filled they were not always empty; sometimes they would be empty, and sometimes not; that no attempt was made to measure the total amount of Hebe that was put before any one specimen; neither was any attempt made to measure the amount of "Everyday" that was fed to any separate specimen under investigation; that the difference in weights in these different specimens might vary according to the amount of food which they actually ate, but inasmuch as the food was kept before them constantly they had a chance to eat all that they wanted; that there was no means of knowing the attitude of the separate rats towards the food; that the witness did not notice any difference in this respect between the Hebe rats and the "Everyday" rats; that if the same amount was not consumed by the one set as by the other it would reflect upon the result; that precaution was taken to prevent the food from getting sour by placing forty per cent of cane sugar to each milk product to preserve it, and therefore there was very little trouble with spoilt milk; that every time Hebe was fed to the rats a new can was opened; that in some cases there was a residue left in the pans when the new supply was put in and no one tasted this residue to see if it was sour; but that if it was sour its appearance would show this; that the pans were washed twice a week, so for three days at a time new supply was added without removing any residue which might be in the pans, and so it was possible that some of the milk put into the pan on the first day would be there on the fourth day; that the witness does not know what killed the rat that was eating the "Everyday" brand of milk; that no post-mortem was made of

any of the rats that died, and that witness does not know what caused the death of any of them; that young white rats are generally healthy; that five of the "Hebe" rats died, and this is a higher rate of mortality than would be expected at the normal rate; that he does not know what the death rate is among white rats; that the rat that died on the cocoanut oil diet just gradually began to show less activity and for a while the weight would start down, and then in about three weeks they would be dead; that he does not know the real ailment of which the rat died, but took it for granted that it was the nutrition of the diet upon which it was fed; that no examinations of these specimens were made before the experiment began to really ascertain the relative state of health of the subjects, except from appearance; that the witness does not really know but that some of the five rats that died while being fed on Hebe might have been diseased when the experiments started, but that he hardly thinks they were as they were apparently the same from appearance; that he would not say all the rats were of the same litter, but that they were about the same size and age; that he does not know whether they were of the same litter or not; that the witness doubts whether there would be any difference in vitality of rats from different litters; that he took as nearly the same kinds of rats by just picking them up as he caught them; that it would have been impossible under the system of obtaining these animals to have gotten them all from the same litter; that such animals are subject to pneumonia, but that would occur in one case the same as in another; that the witness does not think that the experiment was started with any sick animals in either case, but bases this opinion upon the general appearance of the animals only; that no tubercular tests were made; that he is not qualified to testify as to whether such animals are subject to tuberculosis.

Witness further testified that he had read extracts from the experiments conducted by the Department of Agriculture of the United States upon vegetable oils; that he is not doubting these experiments; that the thoroughness with which vegetable oil is assimilated is not the only essential thing in considering nutritive value of the fat; neither is the caloric or the energy value of a fat the only thing that is necessary in considering the nutritive value; that certain animal fats contain vitamins, or growth promoters, while vegetable fats up to the present time do not; that in speaking of

vitamines the witness is basing his testimony entirely upon the literature and work of others.

Witness further testified that practically all of his time during the last two years has been spent in research work, and experimenting with white rats with reference to ascertaining the nutritious value of different foods; that in this particular the witness has experimented with approximately two hundred and fifteen rats; that the experiments with reference to Hebe and "Everyday" milk were carried out with the same attention as is given to other experiments as to feeding and as to selecting the animals; that these parasites are probably bacterial infection, but that the witness is not qualified to say positively; that there were four or five specimens in the Hebe group that developed this parasitical infection, and one or two in the "Everyday" group; that the witness does not know whether this infection is catching; that the animals were not allowed to associate with each other, the different animals being separated by blotter partitions; that these animals could develop infection without having infection when placed in the experiment; that these bacteria will come from the air, but that the witness cannot be sure of the source of the bacteria and is not prepared to testify as to the source of the bacteria; that the witness has no means of knowing what the growth on the different animals was.

On the following day (May 15, 1917) the witness was recalled for further cross-examination, having in the meantime collected the data upon the different experiments, and testified from said data substantially as shown by the schedules submitted below:

**TABULATED STATEMENT BY PROF. HUTCHINSON**

**EXPERIMENT I.**

**Comparison of Butter Fat and Coccoanut Oil.**

Weights expressed in grams

**Series I.**

Butter Fat. June 4 to August 9, 1916			
Animal No.	Wt. Beginning	Wt. Ending	Gain
1	65 gms	237 gms	172 gms
2	58	180	122
3	50	95	45
4*	40	Died June 9*	
Average (excluding 1 dead)			
	58	171	113

\*Note: Replaced by another animal June 9, which died June 11, so excluded.

## Cocoanut Oil. May 30 to Aug. 9, 1916

Animal No.	Wt. Beginning	Wt. Ending	Gain
1*	60 gms	Died June 1	
2	50	177 gms	127 gms
3	40	100	60
4	39	80	41

Average (excluding 1 dead) 43 119 76

\*Note: Replaced June 4 by animal weighing 70 grams which gained 65 grams weighing 135 gms. on Aug. 9.  
Series II.

## Butter Fat. Sept. 30, 1916, to April 18, 1917

Animal No.	Wt. Beginning	Wt. Ending	Gain
1*	60 gms	Died Nov. 19**	
2*	48	Died Oct. 7**	

Replaced\*

1 Nov. 28	87	176	79 gms
2 Oct. 7	30	Died Nov. 19**	

\*\*Rancid Ration.

## Cocoanut Oil. Sept. 30, 1916, to April 18, 1917

Animal No.	Wt. Beginning	Wt. Ending	Gain
1	67 gms	Died Mar. 20	
2	50	140 gms	90 gms
3	55	Died Feb. 20	
4	52	Died Apr. 3	

Note: Mortality so high in this series that no conclusions could be drawn.

## EXPERIMENT II.

Comparison of Evaporated Milk (every day) and Hebe Series I.

## Condensed Milk. May 31, to Aug. 9, 1916

Animal No.	Wt. Beginning	Wt. Ending	Gain
1	45 gms	115 gms	70 gms
2	32	70	38
3	33	87	54
4	44	82	38
5	63	115	52
Average (5)	44	94	50

## Hebe. May 31 to Aug. 9, 1916

Animal No.	Wt. Beginning	Wt. Ending	Gain
1	35 gms	68 gms	33 gms
2	30	80	50
3	37	55	18
4	41	80	39
Average (4)	36	71	35

Series II.

Condensed Milk. Sept. 30, 1916, to Apr. 18, 1917			
Animal No.	Wt. Beginning	Wt. Ending	Gain
1	52 gms.	119 gms.	67 gms.
2	55	127	72
3	29	Died Jan. 13.	
4	34	Escaped Nov. —	
*4 (Replaced Nov. 7 by partly grown rat)	89	Wt. 66 gms.*	
		117	

Average (2, excluding 1 died, 1 escaped and 1 partly grown):

Hebe. Sept. 30, 1916, to Apr. 30, 1917			
Animal No.	Wt. Beginning	Wt. Ending	Gain
1*	49 gms.	Died Oct. 17*	
2	58	140	82
3*	34	Died Oct. 13	
4*	50	Died Oct. 7	
1 replaced Oct. 7	32	94	62
3 replaced Nov. 7	80	160	80
4 replaced Nov. 7	37	115	78
Average (4) excluding three dead	52	127	75

\*Note: No. 3 was first replaced by a wild mouse which lived only three days and was then replaced by a white rat.

The witness further submitted certain literature described in the record as follows: "The Necessity of Lipins in the Diet During Growth," appearing on page 167 of the Journal of Biological Chemistry No. 15, 1913. Also an article appearing in the same journal entitled "The Relation of Growth to the Chemical Constituents of the Diet," by Osborne & Mendel, appearing on page 301 of the same volume. Also article entitled "The Nature of the Dietary Deficiencies in Rice" appearing on page 181 of the Journal of Biological Chemistry, Volume 23, 1915. Also article entitled "The Rate of Elimination of Nitrogen as Influenced by Diet Factors. The Influence of Carbohydrates and Fats in the Diet," by LaFayette B. Mendel and Robert C. Lewis of Yale University, appearing on pages 19 to 53 in the Journal of Biological Chemistry, Volume 16, 1913-14.

The witness further testified that these publications are recognized as authority among men educated along these lines, and are really the main publication of Biological Chemistry in this country.

John F. Lyman,

called as a witness in behalf of the defendants, being

duly sworn, testified that he is 36 years of age and that his occupation is professor of Agricultural Chemistry in the Ohio State University; that he has the degree of Doctor of Medicine; that he has been in the State University since 1909, first as associate professor, and for the last three years as professor; that he has taken the degree of Bachelor of Science at the Massachusetts Agricultural College, the degree of Doctor of Philosophy at Yale University, and at the latter university studied in the laboratory of physiological chemistry under the direction of Professor LaFayette B. Mendel; that the witness' principal office in his entire work has been that relating to what might be called Alimentation, or Dietetics and the use and application of different food substances to supply the human body with the necessary sustenance; that during the last year he has spent his entire time in investigating certain cases of fat metabolism under the direction of Dr. LaFayette B. Mendel.

The witness further testified that it is a fact that cocoanut oil, like butter fat, is a mixture of glyceroids; that cocoanut oil is a purer fat even than butter fat in the same sense that granulated sugar is a purer article than maple sugar, because maple sugar contains certain impurities which give it its flavor and makes it more appetizing; that these impurities are substances which are not ordinarily regarded as constituents of sugar, and come from the sap of the maple tree; that in the same way as regards butter fat there are substances in it, probably a small quantity, which are not glyceroids but which are important substances and must not be overlooked because in dietetics these substances present in a small amount are quite important; that these substances are beneficial in nutrition; that back in 1909 when the witness first came to the Ohio State University his interest was aroused in the question as to whether an animal could live on fat-free diet; that he planned some experiments which were conducted by one of the students in the graduate school under his direction; that these experiments were conducted upon mice, the food of these mice being carefully extracted with solvents which removed all of the fat and in addition removed all of the substances which were soluble in the solvents used, namely, alcohol and ether; that these experiments were continued relatively a short time, approximately two months, and were brought to a close by reason of the fact that the student who was doing the work resigned from the university to take a position in the United States Department of Agriculture at Washing-

ton; that the results which he obtained, however, were quite striking; that mice soon died when fed this fat-free ration.

The witness further testified that a little later there appeared an article in the "Biochemische Zeitschrift" by Wilhelm Stepp in Volume 22 of this publication in 1909, at page 452; that the experiments conducted by Mr. Stepp were similar to the one which the witness had conducted; that Mr. Stepp found that mice fed bread which had been extracted with alcohol and ether soon died in every case; that Mr. Stepp divided the bread into two portions, one portion of which he extracted with alcohol, and the mice fed upon this extract bread died; but when he put the two substances together again so that he had the original article, he found that the animal thrived just as when fed the original bread; that in a later article published in the same journal, Professor Stepp published further results of his studies in which he had found that the substance which he had extracted and which was necessary for life, was rather of a subtle substance although he could not locate it exactly, but believed that it was not a glycerid; in other words, not an ordinary fat, but something else; that a short time after this in 1913, in the Journal of Biological Chemistry published in this country under the auspices of the Rockefeller Institute, there appeared two articles which further continued this same investigation of Stepp's; that Dr. McCollum of the Wisconsin Experiment Station verified the observations of Stepp with rats fed on a fat-free diet plus a relatively pure glyceride such as lard cannot thrive and grow properly, but when fed the same diet with the exception that the lard is replaced with butter fat, or the fat from the yolk of an egg, then they do thrive normally and make normal growth and reach maturity; that a few months after the appearance of the paper by McCollum the experiments were verified in an article published in the Journal of Biological Chemistry, by Dr. T. B. Osborne and Dr. LaFayette B. Mendel of Yale University, and these latter gentlemen added to the list of fats which contain this growth-promoting substance cod liver oil, an animal fat, and they also found that almond oil, a vegetable oil, is lacking in the substance and resembles lard in its failure to properly support growth.

Witness further testified that he observed only the beginning of the experiment conducted by Professor Hutchinson; that he did not see the experiments when they were concluded.

Witness further testified that so far as he is aware from a study of the literature no vegetable oil has been discovered which has the constituents that supply the nutritive properties that exist in butter fats; that in this particular line of dietetics the witness would say that Dr. E. B. McCollum of the Wisconsin Experiment Station is the leading authority.

On cross-examination the witness testified that he had examined the bulletins of the Department of Agriculture as to the digestibility of vegetable fats; that the data contained in these bulletins is absolutely reliable; that the question of the utilization or digestibility is somewhat different from the question of the presence of these growth-promoting substances in fats; that it is probably true that the vegetable oils are slightly better utilized than the harder fats; that the chief value of fats in nutrition of adults is that they furnish energy which the body requires to perform its work; that the statement on page 3 of Volume 469 to the effect that the adult diet which contains sufficient quantities of fat and carbohydrates to insure it the required amount of energy as well as a sufficient quantity of proteins to supply the necessary nitrogen for growth and repair of the body, also mineral matter for growth and other bodily needs and vitamins or similar bodies required render the diet adequate for maintenance, is correct and is the usual statement as to the needs of the body.

The witness then read the following comparisons as given on page 7, showing the caloric values of vegetable oils as compared with butter:

“Energy furnished by one pound of common fatty foods. Standard for comparison, 1000 calories:

Butter .....	3490 calories
Bacon .....	2835 calories
Lard .....	4080 calories
Vegetable fats .....	4080 calories”

Witness further testified that vegetable fat has somewhat more caloric value than butter fat, about 600 calories more than butter, but it must be remembered that butter is twenty per cent. water; that caloric is a unit of heat and caloric value represents the heat value of a food; that the energy of the foodstuffs is used in the body to maintain the body temperature and to supply the body with energy to do work, or it may be stored temporarily in the body in the form of fat; that as to the experiment appearing upon pages 10, 11, 12 and 13 of Bulletin No. 505 of the Bureau of Chemistry of the United States reading as follows: “In Experiment No.

224, with subject O. E. S., a relatively large amount of fat, 131 grams per day, was even more completely assimilated, and as evidenced by the report produced no abnormally alimentary symptoms. In fact, no one of the subjects reported any laxative condition." The witness would say that this experiment indicated a high utilization, good digestibility, and good absorption of the material which indicates that the food is well used in the body to produce strength or heat; that the fats do not supply the material for growth in the ordinary sense, except as they supply these growth-promoters or vitamins; that a food may be well assimilated in the development of energy and strength, but when it comes to growth no growth is attributable to the fats unless they are butter fats; that the experiments as to these growth promoters are still in an experimental stage and have not yet reached the extent of being able to say what this growth-promoting substance is; that these growth-promoters have never been found in any vegetable oil, but have been found in butter fat and the fat of the egg yolk and cod liver oil.

Thereupon counsel for plaintiffs asked the witness the following question:

Q. Do you find any other ingredient in food outside of fat that produces growth?

A. A growth, of course—we have to recognize that growth is the result of complete nutrition. Growth may be stopped as the result of cutting off of any one of a number of things, as these substances found in fats necessary for growth are only one of the essentials for growth. There are other things which are also essential, but growth may be limited or stopped by the lack of any one; proteins, for example, are necessary. If the diet does not contain proteins an animal cannot grow. If the diet does not contain the proper minerals, lime, iron, and so on, an animal will not grow. If the diet does not contain the proper growth-promoting substances which have been found in the fats, the animal does not grow; so that it is difficult to say that growth is the result of any one thing in the diet. It is the result of complete nutrition. Everything must be present which is required.

Thereupon Judge Sater asked the witness the following question:

Q. Do I understand you to say that there are no growth-producing elements in a vegetable oil?

A. A number of studies have been made up to the present time on vegetable oils—

Q. I am speaking now including such as cocoanut oil.

A. Yes. It would be stretching the point to say that these vegetable oils were of no value in growth. They may be of some value, but they do not contain a certain substance which is essential to growth; that is, if the fat of the diet is limited to a vegetable oil, as far as we know at the present time there can be no growth; or I would not say it exactly that way—growth will be stunted and limited to a shorter period, eventually will cease with the animal in an immature state.

The witness further testified that after the results of Stepp were published the question of growth on a fat-free diet was investigated by Dr. Mendel at Yale, who published an article about 1910 in the *Journal of Biological Chemistry* in which he came to the opposite conclusion from Stepp, in that Mendel found that growth was possible on a fat-free diet, but after a fuller period of experimentation Mendel found that fats, or the substances which are present in certain fats, the growth-promoting substances, must be present.

The witness further testified that the following statement, appearing upon page 13, Bulletin No. 505 of the United States Department of Agriculture, dated February 13, 1917, "The protein and carbohydrates were 64.5 per cent. and 96.7 per cent. available to the body, values which compare favorably with the thoroughness of digestion of these constituents usually found in similar tests. It may be reasonably concluded on the basis of these results that a cocoanut oil is suited to serve satisfactorily for food purposes" is correct, and that he would not deny that cocoanut oil is satisfactory in certain cases; and he further admitted that the following statement appearing in the same bulletin is correct: "These values indicate that the vegetable fats studied, with the exception of cocoanut butter, have for all practical purposes the same digestibility and are utilized as completely as the animal fats."

Witness further stated that the white rat is probably better suited for experimental purposes because the diet of the rat is similar to the diet of mankind, also the rat is a parasitic animal and thrives best on the scrapings from the table; furthermore white rats are very easily obtained; are small and easily handled and can be fed foodstuffs which are expensive and hard to prepare, because they do not require a great deal of food per day; furthermore the animal comes to maturity quickly and completes its life cycle so you get a whole generation in a few months; that the witness does not know the aver-

age life of a rat, but has known a rat to live two years; that after all the human being is the real test, although as far as experimentation work has been done the witness does not know of any experiments which show that findings obtained from the lower animals have gone astray on mankind.

Witness further testified concerning the experiments conducted by Professor Hutchinson from September 30 to April 18 on Hebe, rat No. 1, which died on October 7, ought to be eliminated because it cannot be said that the diet killed the rat, and that rat No. 4, which died on October 7, should be eliminated also; that also the rat which lived only 13 days ought to be eliminated.

Dr. E. V. McCollum,

called as a witness on behalf of defendants, being duly sworn, testified that he resides at Madison, Wisconsin, and holds the position of Professor of Agricultural Chemistry in the University of Wisconsin; that he took his undergraduate work in the Kansas University and received the degrees of Bachelor of Arts and then Master of Arts in 1906; the degree of Doctor of Philosophy from Yale University, after which he remained there one year and studied physiological chemistry further; that he has held a full professorship in Wisconsin University for four years, and has been in charge of agricultural chemistry in various ranks for ten years; that he has given practically all of his time for ten years in making experiments on animal life of the effects of food products; that when he took up the study of nutrition in 1907 there had been so little progress as the result of a half a century of effort by medical men that he had hesitated to enter upon this work as a life work; that there was just one thing that led him to make a decision to enter this work, which was, that the text books of ten years ago, enumerated as the essential factors of an adequate diet proteins, carbohydrates, fats, and inorganic salts and water; that he was well aware in 1907 that experiments in Sweden, in Germany and in England were being carried out by well known physiologists in which efforts had been made to carefully purify proteins, carbohydrates, starches, sugars, and fats, mixtures of salts of various kinds and to feed these mixtures to young animals in an effort to properly nourish those animals on such diets; but these experiments in every case failed from the beginning of the feeding until death ensued; that there was no explanation in 1907 as to why such failure resulted; that all the ingredients which the text books on nutrition of that day enumerated as the essen-

tial things in a diet were there; that these diets were digestible in all their ingredients, and yet failure was nearly as rapid on such diets as if the animal had no food; that it was particularly with a view to finding out the causes of these results by foreign investigators that the witness took up this work ten years ago; that he was the first in this country to attempt to repeat such experiments with purified foodstuffs carefully prepared so as to contain everything which the expert dietitians of the day said were essential chemical things in a diet; that his results agreed absolutely with those of the foreign investigators; that the question then arose as to the cause of this failure; that if a mixture of purified foodstuffs consisting of the proteins from milk, carbohydrates, such as starch and various sugars, and a fat such as olive oil, or other plant oil and inorganic salts closely imitating the content of each ingredient of an inorganic nature in milk a food which makes animals grow and thrive is fed to some little animal it will be observed that the animal loses weight from the day you put them on that diet until death ensues; that the witness has tried this experiment hundreds of times; that if this mixture already described has incorporated in it five per cent. of butter fat the animals will fail just as they did before the butter fat was put in; that if this mixture containing five per cent. of butter fat is mixed with a surprisingly small amount of the water extract, or alcohol extract of almost any natural food such as a grain, a seed, a leaf, a tuber, or fruit, and the mixture is fed to an animal he thrives throughout life and his growth will be at the normal rate; that if this water extract or alcohol extract be put into the mixture, but the butter fat left out and some plant oil substituted for the butter fat, animals fed upon this sort of a mixture will be no better off than they would be without the alcoholic extract; that the butter fat itself supplies some, but it is not the only thing and is still inadequate chemically; that both the butter fat and the alcoholic extract or water extract must be present; that there are two heat substances or growth substances the chemical nature of which is not known, which must be in the diet before growth and prolonged well being will result; that you can put in your extract, leave out the butter fat, and the experiment is a failure; that you can put in the butter fat and leave out the extract and again they will not grow; that the witness was the first to make these observations, and after repeatedly verifying same the results were published in 1912 in Volume 15 of the Jour-

nal of Biological Chemistry, at page 167; that six months later in Volume 16 of the same journal, page 423, Professors Osborne and Mendel completely verified the witness' observations on butter fat; that the witness has made experiments as above with oil from wheat, oil from corn, from oats, from barley, from rice, from sunflower seed, from hemp seed, from peanut, from almond, from olive, from cotton seed, from flax seed, and others, but has not made such experiments with cocoanut oil because witness finally lost faith in the value of plant oils in general as a source of this unknown; that he has conducted experiments with farm pigs, guinea pigs, chickens, and cattle, and has reached the conclusion as the result of approximately 3000 carefully conducted feeding experiments that the chemical requirements of all the higher organized animals for nutrition are practically, if not quite, identical; that practically the same results as to growing can be obtained by employing the fats of the yolk of the egg and by cod liver oil or the fats extracted from a kidney, freed from vegetable fat by means of fat solvents; but that in no instance can this unknown substance contained in butter fat be obtained from plant oil so far as the witness has been able to find out; that the witness would not say without experiment that cocoanut oil has not the growth promoting properties of animal fat, but can only reason from analogy with other plant oils in that respect; that the witness has made numerous efforts in the past few years to make a chemical separation of this unknown substance which butter fat contains; but has not succeeded in doing so, except to determine that it is not a fat in itself and is not one of the fatty acids, but is something of a totally unknown nature that is simply associated with these fats.

That this is one of the things that witness did; butter fat is carefully converted into glycerin and soap by the action of an alkali under such conditions that water does not come in contact with the system—this is what the witness did: Instead of dissolving the fats in a watery solution of an alkali to make soap, witness dissolved the fats in strong alcohol and chloric ether. Chloric ether is a light, volatile, mobile oil, similar to gasoline. If witness would put an alcoholic solution of potassium hydroxide, potash, into that, he would have a solution which, on standing for a time, would convert the butter fat over into glycerins and soap; that all the acids which are in butter fat combine with glycerins to form these volatile fatty acids, and all those fatty acids have been the volatile ones and all have been converted into the

basic salts in that way and then they are no longer volatile, because then they are in the form of salts; soaps are not volatile, and all these volatile fatty acids may be put into soaps; when the resultant soap mixture made from butter fat is dissolved in water, there is no fat there, the fats have all been decomposed into glycerins and fatty acids and the fatty acids have gone into the combination with the potash to form soaps; witness has taken the soap solution and put it into a certain amount of olive oil, pure olive oil, which had been tested very thoroughly, and found the olive oil to be without this growth promoting substance; if the same olive oil is agitated thoroughly with this soap solution, and let it come into contact with the soap solution very thoroughly, and then separate that olive oil with a solvent such as ether, and evaporate the ether, and you get the olive oil back again and out in a dish, that olive oil will make them grow in precisely the way that butter fat did before it was decomposed into soaps. The substance that induces the growth is not a fat itself, neither is it one of the fatty acids which result from the decomposition of the fats; but it is something of a totally unknown nature that is simply associated with these fats, because it is soluble in fats; that this unknown element could not be present in the form of a soap; that the substance in question, the physiologically important substance, is in solution in the fat; the witness holds this view as a result of considerable investigation. It is not itself a fat, it is of unknown nature, but we know it is not a fat, otherwise when we convert the fats of butter into soaps it would be converted also, and therefore would lose its value as a peculiar substance; that the difficulty is here: witness wishes to get the unknown substance out of the butter fat, but how shall it be done; that this is a difficult matter; that one way to proceed is to convert the butter fat into something having entirely different properties from the butter fat and therefore presumably, or possibly, unable to dissolve this unknown substance with which it was associated, and in this way after the soaps were made from the butter fat, we have the unknown thing with certain soaps and glycerins, but we know it was already with butter fat in the beginning; that it was a soluble thing in the butter fat, so we will substitute another fat which does not dissolve the soap nor the glycerins, shake the soap and glycerins with the new foreign fat, which did not possess this substance in the beginning, and owing to the solubility of that thing, it goes over into the new fat and thereafter we feed that

fat and demonstrate the presence of this unknown thing by the growth of the animals, knowing that over a certain period, a certain preliminary period, they did not grow having the same olive oil in the same amount of diet; that, in short, the olive oil takes up the unknown quantity from the soap, and possesses substantially, at any rate, the qualities of butter.

That the witness is thoroughly familiar with all of the literature in this field, and that there is not known to science today any vegetable fat which contains these growth promoting qualities of butter fat; that as to the gains made by the rats fed upon Hebe in Professor Hutchinson's experiments, the witness would say that skimmed milk would still retain a very appreciable amount of butter fat so that a little butter fat remains; and in the case of an extraordinarily vigorous animal it made a pretty good growth on such a diet over a period of several months, possibly four or five months; that the witness has repeatedly adjusted these diets so low in the butter fat factor, or so low in the water and alcohol soluble dietary factor, or by adjusting protein content so low that the animal would just make his normal curve of growth; but if 25 animals were reared on such a diet no young could be obtained; or if any young were obtained they would die within a day or so; that the witness would not say that butter fat is the thing above all things that makes a diet adequate, but it contains an indispensable thing which it is necessary to have so far as the witness' experience or the experience of others goes, and which is not found in plant fats.

The witness further testified that there is no difficulty about the isolation of the butyric acid fats in butter; that this acid has no function other than it is a source of energy; that reasoning from analogy with other experiments with numerous other plant oils, the witness would say that coconut oil does not contain the unknown factor notwithstanding coconut oil is the only vegetable oil that contains all of the volatile acids that butter fat contains except butyric acid.

Witness testified that he was in court when Dr. Lyman was on the stand, that he heard the questions put by Judge Hollister to Dr. Lyman, which was to account for the moderate amount of growth obtained on a mixture of skimmed milk powder and coconut oil. The witness testified that reasoning from analogy with other experiments, with numerous other experiments with numerous other plant oils, he had not found this unknown growth-promoting quantity; that he wishes to empha-

size that the confidence with which he speaks to the court is a confidence born of a far greater experience with nutrition experiments, carefully conducted than that of any other living human being. Witness testified that the percentage of those volatile acids in cocoanut oil is twenty-five per cent. of what they are in butter fat; that in butter fat, we start with the fact that the element of growth is in there somewhere; that in regard to its being in cocoanut oil, the witness says that when he came to examine the various seeds, such as the kernel of the corn, the oat and the wheat, barley, rye, etc., he found in all cases the seed is distinctly poor in its content of this substance which butter fat supplies; that the same is true of oranges, apples, pears and peaches and fruits generally; that these things have been carefully looked into, and they will not supply the animal in the amount he can consume, will not supply the butter fat factor; that the only place in the vegetable kingdom that you can obtain the butter fat to meet the needs of a young growing animal is in the leaves of the plant, and contrasting the leaf generally with the seed, witness testified that the seed consists of a tiny germ tip which, under appropriate conditions is capable of development into a little plantlet and becoming independent of the rest of the seed and growing into a plant; that the leaf presents a greater surface to the sun and air; that the leaf is the place where the plant takes in the carbon dioxide from the air and the energy from the sunlight and takes water and salt from the soil, and it makes proteins, carbohydrates and fats; in other words, the leaf is a physiologically very active thing. Witness stated that his belief, based on numerous experiments, is that the leaf is rich in this unknown thing which is in butter fat and the seed is very poor; that reasoning from analogy with the cocoanut oil, the latter is obtained from the fruit of a certain plant; the fruit consists of things other than the metabolizing cells of the leaf; that witness deemed it highly improbable as the result of a third of a life of experiments that cocoanut oil contained this unknown quantity found in butter fat; that witness would not characterize this unknown quantity as being embraced within the volatile fatty acids for the following reason: If we extract with a suitable solvent such as ether or chloroform, the fats out of a kidney of an animal, or the liver of an animal, free from visible fat, that there are no volatile fatty acids in there to anything like the extent found in butter fat, or even in cocoanut oil, and yet the growth-promoting properties

of those fats from the liver and the kidney are extraordinarily high, comparable in every respect with butter fat; that this is a matter not associated, in witness' judgment, with volatile fatty acids in any respect; that the fats of the yolk of the egg, for example, possess no such high volatile or fatty acids as does butter fat, and yet they are among the most effective of all food fats when it comes to inducing growth. The witness is confident in his belief that this quality of volatile or fatty acids does not necessarily go with the growth-promoting property in the slightest degree.

The witness further testified that in his judgment the unknown factor or growth-promoting property is not associated with volatile acids in any respect; that the witness cannot answer the question whether this unknown quantity appears in cocoanut oil.

The witness then presented a paper entitled "Hoard's Dairyman," a journal devoted to dairy farming, dated July 21, 1916, and to the introduction of this paper in evidence plaintiffs, by their counsel, then and there objected on the ground that an expert witness may identify articles of others that he relies upon and have them offered in evidence, but not his own; but the court ruled that said paper might be received subject to complainants' objection as aforesaid, to which ruling of the court complainants, by their counsel, then and there duly excepted.

Whereupon said article referred to was received in evidence, marked Defendants' Exhibit "B," and is in the words and figures following, to wit, being only the article in Hoard's Dairyman (hereto attached) headed "The Present Situation in Nutrition," by Dr. E. V. McCollum:

#### Defendants' Exhibit B.

##### The Present Situation in Nutrition.

Dr. E. V. McCollum, Wisconsin College of Agriculture.

In the universities and agricultural experiment stations there has for many years been expended a considerable amount of effort and money in the study of the problems relating to nutrition of animals. Considerable progress has been made, but the amount of progress has been small when compared with the amount of work that has been done and the amount of money which has been expended. The results have a value which entirely justify the cost. Certain rations have been found highly satisfactory in the production of growth, but unfortunately these rations are more expensive than certain other mixtures of foodstuffs which chemical analysis in-

icates should give good results, but which practical trials have shown to be unprofitable.

If one studies carefully the literature of the decade just passed, one must become convinced that progress has not been very rapid. Animal husbandrymen of wide experience have admitted to me that they believed that with the present methods of trying this or that concentrate versus another has taught us about all that it will ever teach. These men all keenly appreciate the fact that certain mixtures of foodstuffs promote the well being of animals, as shown by appearance, rate of growth, fertility, or productivity, in some way which we do not understand, and which cannot be predicted from the results of the most careful and searching chemical analysis. It is the appreciation of the fact that there are more subtle effects of feeding than can be gained in the present state of our knowledge by chemical studies which has led Evvard of Iowa, one of our most progressive animal husbandrymen, to try in an elaborate way the reliability of the instincts of farm animals as a guide to the proper selection of the most favorable combinations and proportions of food ingredients.

In this article I shall try to make clear the views of the present situation in nutrition which I hold as a result of a very considerable experience in feeding of small laboratory animals. I was led to select the rat as an experimental animal because it is small enough to make it possible to do a lot of chemical work on the things which are fed to it, and a complete knowledge of the constituents of the ration can be obtained. Obviously extensive separations of the naturally occurring foods into their constituent parts, as protein, fats, carbohydrates, inorganic elements, cannot be done when large animals are employed for experimental purposes.

#### Proteins of Various Plants not Equally Efficient.

In Bulletin No. 17 of the Wisconsin Experiment Station, satisfactory proof was for the first time brought forward to show that the chemical composition of the ration, as revealed by any methods of analysis at present known, gave no indication whatever as to whether the ration would be a satisfactory one for the nutrition of an animal. In the experiments described in this bulletin, we fed four lots of young heifers of 350 lbs. on rations containing the same content of protein and digestible nutrients, but one ration was made up wholly from the wheat plant, another from the corn plant, and another from the oat plant. A fourth lot received a ration made up of a mixture derived from all three plants in about

equivalent amounts. Very briefly the main results were as follows:

All lots grew at about normal rate, but after a few months it became easily observable that the wheat lot was not so well nourished as the others. This was most evident from the appearance of the coat. The corn and oat fed lots bred earlier than the wheat fed one, showing that the latter were depressed in some degree. The corn lot produced calves which were of normal size and full of vigor. The oat lot produced calves which were of about normal size but with very low vigor, while those from the wheat lot were about half as large as the normal calf at birth and were dead or ready to die when born. We set ourselves the task of finding out why there was so much difference in the nutritive value of these rations having the same chemical composition.

#### Purified Foodstuffs Do Not Support Life.

Before this time, a number of foreign chemists had tried to get young animals to grow on rations that were made up of mixtures of carefully purified proteins, carbohydrates, fats, and salt mixtures from the chemical laboratory. These salt mixtures must contain all the salts which are left as ash when the body of animal is burned, and include the potassium, sodium, calcium and magnesium salts of sulphuric, phosphoric, and hydrochloric acids. When such rations are fed the animals not only do not grow, but they will not live any great length of time, ordinarily not beyond two months. Now the essential thing to remember about this work is that the foodstuffs were highly purified.

If we take such a mixture of foodstuffs, which does not support an animal, and stir into it a small amount of egg yolk, say, for a pound of the ration, an ounce of egg yolk, and then feed this mixture to some more animals, they will grow satisfactorily. The same result would be obtained if we had put in an ounce of dried milk instead of the egg yolk. If we had put in this amount of wheat or corn, or even of meat, we should have been unable to make the animals grow or to remain in a healthy condition.

#### All Fats Not Alike.

Suppose now we take all the fat out of the egg yolk by extracting with some solvent which dissolves the fats, and then put into the mixture of purified foodstuffs the part of the yolk which is not fat, and then feed the mixture to a group of little rats. We find they will not grow. We can keep them for a month on this ration without any increase in weight, and then make them

grow by putting back the fats of the yolk which we had taken out. There is something about this which should make us stop and think a little. If we should have at hand a book on dietetics or on animal feeding and should turn to the part where fats are discussed, we would see the statement that fats are a concentrated source of energy which the animal stores in a time of liberal feeding which it can draw upon in a time of need as a source of heat or muscular work. We would read nothing about any influence of fats on growth.

Suppose at this point we make up a new batch of our mixture of purified foodstuffs, and adding to it the fat free part of an egg yolk, which addition we have determined will not make little rats grow. We now add to it a liberal amount of olive oil instead of egg fats and feed the resulting ration to some little rats. They will not grow. If we take away the olive oil or leave it in and add again the fats which we took out of the yolk, they will begin to grow the day we make this addition, and stop growing any day we take these fats out. We might try a whole series of experiments like the ones we have described and leaving out the egg fats, try cottonseed oil in one, lard or tallow in others, peanut oil or almond oil in others, and in all these experiments there would be no growth whatever. If, however, we had included one in which we put butterfat, we should find that this lot would grow just as did those which received egg fats. The fats from a kidney would induce growth and to some extent those from the muscles, but the vegetable fats and oils will not do so. The book on dietetics or feeding was all right when it was written, but it needs a new edition. We did not know until two years ago that there was something about certain fats which is indispensable to the young, growing animal and without which his nutrition must fail. The fats of milk and eggs and of certain organs are particularly rich in this substance and while it is found in the plant kingdom it is always in amounts too small to supply the needs of a rapidly growing animal, at least so far as we know at present.

The point which I wish to emphasize here is that we are not to speak of fats in our discussion of nutrition without recognizing that all fats are not of equal value to the animal during growth, because they have about the same energy value and are about equally well digested and absorbed. By the simple experiments I have described this is made clear. I wish also to point out that a thousand years of painstaking effort in the study

of nutrition problems by the regular procedure of the animal husbandryman, would never have disclosed this peculiar growth-promoting power of certain fats as contrasted with others. Here is a something which is indispensable for the growth or prolonged well-being of the young animal, and without which no amount of protein, palatability or digestibility will produce a ration which will suffice. Yet this wholly unsuspected substance would never have been discovered without experiments of the kind described above in which purified foodstuffs were employed instead of mixtures of naturally occurring ones.

#### Alfalfa Leaves as a Substitute.

It is obvious, then, that in making up a ration for a growing animal we must take into account this new factor as well as the hitherto considered constituents of the diet. We mentioned above egg yolk, milk, and animal organs as sources of this substance, and stated that wheat, and corn, and meat, with the exception of the organs of the animal, as not containing enough to supply the demands of the growing young. We have recently demonstrated that the grains above mentioned do contain a little of it, and that the wheat germ is especially rich in it. Alfalfa leaves are the best source of this unknown dietary constituent that we have yet found, but there is good reason to believe that the forage portion of the plant is in general a better source of it than the grains. The small amount of it which we find in grains is concentrated in the germ, and since this makes but a small per cent. of the entire kernel, the kernel itself is a poor source. This peculiar property of alfalfa leaves helps us to appreciate why young pigs grow so much better when given pasture along with grain feeding than they do when fed grain alone. We can also appreciate that variety along with careful attention to the proper chemical composition does not by any means assure us of success with a ration.

#### Why Milk Fat is Valuable.

The question has often been asked: If the body fat of the animal is so poor in this growth-promoting substance, and the young animal is not able to manufacture it from some other constituents of his foods, how is it that the milk of an animal is one of the very best sources of it? In my opinion the explanation is this: The milk producing female, having attained her growth, no longer has a very great need for this growth-promoting substance, and so does not use up the supply of it which exists in her food supply in a concentration too small to

meet the needs of the young. She concentrates the amount found in her food into her milk, thus producing a food for the young which is much richer in this constituent than was the mother's ration itself. The richness of the forage portion of the plant in this substance also accounts for the fact that the great milk producers are the herbivora, whose digestive tracts are so constructed that they can handle large quantities of forage. Such animals as the cow can in this way produce milk of good quality in respect to this substance, in amount sufficient to meet the needs of her young several times over, while such animals as the sow with much less capacity to consume and digest forage plants can produce no more milk than is essential for the nutrition of their own litters of young.

The question also arises: Is milk all of the same quality with respect to this growth-promoting substance which is present in so adequate amount in butterfat, or will a ration which may be adequate in all respects except for its content of this unknown substance lead to the production of milk of poor quality in its growth-promoting power? I am strongly inclined, as the result of a considerable number of experiments, to believe that this constituent can be put into the milk only as it is present in the food of the mother, and that milk can be produced from certain diets which is unsuited for the nutrition of the young and without the power to induce growth although it may have the normal amount of protein, fat, and milk sugar. Of course this means that butterfat of such milks would produce butter of low grade. It seems certain, however, that the average dairy ration, made up with a liberal amount of forage, or of hay, and of such a quality as to be palatable, will insure an adequate supply of the growth-promoting substance in the fat.

#### Butterfat vs. Oleomargarine.

I have been repeatedly asked if this story of the peculiar food properties of butterfat as contrasted with the body fats of animals is not to be construed as the funeral oration of the butter substitute. In the past the butter-substitute man has argued that one fat yields as much energy as does any other fat, and all fats are about equally well digested and absorbed, and that when he makes a product which is as palatable as butter, he has something just as good as butter in every respect, and at a great saving in expense.

My answer to this question is as follows: The butter substitute, containing a considerable amount of admixture of the body fats of the animals, is not equal in its

physiological properties to an equal amount of butter, although it may possess as much energy and equal digestibility. As an energy food it may be just as good as butter, but in the peculiar growth-promoting power we have been discussing, butter is lowered in value in so far as it is diluted with animal or vegetable fats. Among the ordinary human foodstuffs the sources of the unknown substance indispensable for growth are eggs, milk and meats. Meats do not furnish so much as do either eggs or milk. All other human foods either do not furnish this substance at all or contain entirely inadequate amounts of it. It is easily possible and practicable to give the young child what the needs of this substance in the form of milk and eggs, and still allow him to eat a butter substitute on his bread. At least I believe there is no doubt that this can be done. There are no substitutes, however, for these two kinds of foods for the growing young. The experience which I have had up to the present time in trying to determine the relative amount of the unknown substance contained in butterfat, which is necessary to maintain a grown animal as compared with the amount necessary to induce growth in the young, is still entirely too small to warrant drawing satisfactory conclusions, and I can only say tentatively that the amount required to maintain a grown animal is quite small in comparison.

#### Application to Growth of Farm Animals.

I have in this discussion emphasized the importance of the special property of certain facts as contrasted with others, because this factor in dietetics and animal production has up to very recently not been appreciated. It is in reality of the same relative importance as the other well recognized factors concerned in an adequate ration. None can be inadequate and success be attained in their use. It seems evident to me, however, that there are a great many substances to be found on farms in which this particular factor is the one which is determining the rate of growth of young animals, especially pigs. It is easy to compound rations which, if they contained more of this growth-promoting substance, would support growth at the maximum rate which, because they carry an inadequate amount of it, are causing the animals to grow about half as fast as they are capable of growing. It is this factor which is in a considerable degree responsible for the fine rate of growth which always follows the feeding of skim milk along with a grain ration. The value of meat scraps when added to such rations is like-

wise in great measure the result of the increase of the content of this substance.

In the next paper I shall discuss the importance of another substance of unknown chemical nature which we have found to be indispensable from the diet of both of the young and the adult. Fortunately, however, this one is much more widely distributed in vegetable products and less care and expense are necessary in order to provide animals with an adequate amount.

Thereupon witness identified another paper as one which he published some months ago, giving the results of experiments with a long list of vegetable oils. Plaintiffs, by their counsel, objected to the introduction of said paper in evidence on the ground that an expert witness may not identify his own articles so as to entitle such articles to be introduced in evidence; but the court ruled that said article might be received in evidence subject to plaintiffs' objection, to which ruling of the court plaintiffs, by their counsel, then and there duly excepted.

Thereupon the last named article was received in evidence, marked Defendants' Exhibit "C," and is in the words and figures following, to wit, being the entire exhibit hereto attached:

Defendants' Exhibit C.

Reprinted from The American Journal of Physiology, Vol. 41, No. 3, September, 1916.

The Distribution in Plants of the Fat Soluble A, the Dietary Essential of Butter Fat<sup>1</sup>.

E. V. McCollum, N. Simmonds and W. Pitz.

From the Laboratory of Agricultural Chemistry of the Wisconsin Experiment Station.

Received for publication July 5, 1916.

In 1913 it was pointed out in a paper from this laboratory (1) that certain fats of animal origin contained a substance the nature of which is as yet unknown, which is essential for growth or for long continued maintenance of health in the rat. Olive oil and lard were shown not to possess this growth factor. Later Osborne and Mendel described experiments which fully confirm our observations and added cod liver oil to the list of growth promoting fats, and almond oil to the list of fats which exert no special influence on growth (2). It was a matter of great importance to determine whether this indispensable dietary factor which we have termed the fat soluble A, (3) is present in foods of vegetable origin or whether it is a specific product of the mammary gland in mammals and the ovary in birds elaborated for the

benefit of the suckling or of the embryo bird. We have for this reason examined various types of substances of plant origin, feeding these with rations so made up as to be wholly adequate when one of the growth promoting fats was included but inadequate when such fats were omitted. In the present paper we present the records of rats fed rations in which maize, cottonseed, linseed, olive, sunflowerseed, and soy bean oils respectively were the only source of the dietary factor supplied by butter fat.

All these have given results which make it clear that the fat soluble A is not found in fats and oils of plant origin so far as we have been able to discover. Owing to the importance of this fact, from the point of view of practical dietetics and animal production we desire to record these negative results for the more widely used plant oils.

One of the most interesting results of this investigation is the great difference in the effect on rats of consuming cottonseed oil which was prepared by extraction with ether, as compared with those fed a similar ration but with commercial bleached oil prepared by hot pressing. The former suffered distinct intoxication within a few weeks and showed rapid loss of weight (Chart 7, Lot 512) whereas the commercial sample could be fed at the same plane of intake with no signs of injury. (Chart 7-Lot 531.) This result serves to corroborate the observations of Withers and Carruth (4), that the toxic factor "Gossypol" is soluble in ether and is present in the fat prepared by the use of this solvent.

Among the other oils of plant origin which we have studied, wheat oil, linseed oil and hydrogenated cotton seed oil have shown definite but not severe toxic effects on young rats. This we have been able to demonstrate by employing as rations, with which the fats were fed, food mixtures so made up as to just admit of about normal growth for several months but so low in their content of the fat soluble A as to render the animals sensitive to any unfavorable factor which might be superimposed on it in their delicately adjusted condition. In this way we have made it possible to test for toxicity of low intensity which would never induce visible effects if present in a diet which was otherwise of good quality.

This principle should be carefully considered by those who would study the harmfulness or innocuousness of various substances which may occur in the diet (5). Any of the several factors which make up the satisfactory diet can be singled out as the one to serve as the

limiting factor to be so adjusted as to lower the resistance of the experimental animals.

In experiments in which the fat soluble A of the diet was supplied wholly by vegetable products it has been found that alfalfa leaves are an excellent source of this dietary factor, and that cabbage leaves also supply it. The cereal grains, while containing a small amount, are markedly inferior to alfalfa leaves in their content of this indispensable dietary factor.

The marked success which was reported by McCollum and Davis in restoring to health by the addition of corn, rats which had been brought to the threshold of death by a diet of supposedly approximately pure food-stuffs, should now be regarded in a new light because we have since learned of the tendency of lactose, which was a constituent of the earlier diets employed by us, to carry as impurities a sufficient amount of the unidentified dietary factors, fat soluble A and water soluble B, to supplement the content of these in any natural food, to a degree not to be ignored (6). Corn kernel fed with lactose led to improvement in the rats to a degree which corn alone could not induce (6). In the preceding paper we have described rations in which all of the fat soluble A was derived from 40 per cent alfalfa leaves, and reproduction was observed after the rats had made all their growth and had continued ten months on the diet. Corn, wheat, oats and probably other grains supply this factor but in amounts below the requirement of animals over extended periods of growth.

The superiority of the forage portion of the plant over the seed with respect to its content of the fat soluble A is of considerable interest when viewed in the light of the dietary habits of lower animals. Those which consume the forage rations grow successfully from generation to generation on a strictly vegetarian diet, while the seed eating animals, so far as we have been able to learn, normally vary their diet to a considerable degree by the addition of green leaves, worms, insects, etc. Certain combinations of seeds may however suffice for normal nutrition.

An observation of interest in the experiments reported here, is that the ether extracted residue of corn meal is more effective in causing a slow but long maintained upward trend of the curve of growth than is corn oil. Compare Chart 10, Lot 451, and Chart 3, Lot 630. The interesting point is that ether extraction of plant tissue does not remove the substances essential for growth which is contained in butter fat. The obvious working





Lot 609 shows the failure of a widely used commercial substitute for lard, Crisco, made by hydrogenating cotton seed oil, to induce growth in young rats. On replacing the Crisco by butter fat in the second period growth proceeded.

Lot 444, shows that 6 per cent of linseed oil fails to induce growth. We have been unable to find a single instance where the isolated fats and oils of plant origin promote growth in the manner that certain animal fats do. The rats in this group appeared very rough coated, emaciated and feeble and were in a much worse condition than those of Chart 1, Lot 610, whose ration was closely similar but contained dextrin instead of linseed oil. Linseed oil is somewhat detrimental to the rat. This does not indicate the absence of the fat soluble A from plants. We have already pointed out that alfalfa, wheat germ, maize kernel and cabbage furnish a considerable amount of this substance.

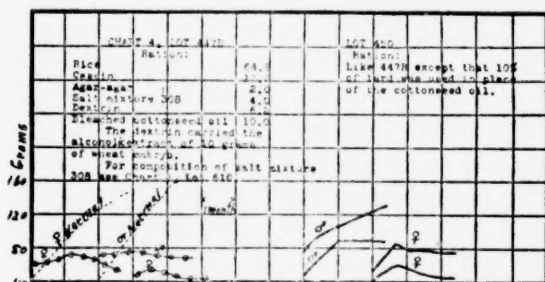


Chart 4. Lot 447B shows the absence of the dietary essential the fat soluble A from bleached commercial cotton seed oil. Even 10 per cent of the latter fails to induce appreciable growth.

Lot 450 serves to confirm our earlier observations on lard, which showed it to possess very little of the growth promoting properties of butter fat, i. e., the fat soluble A. In our early work the content of the water soluble B was dependent on its presence as an impurity in the lactose. In the present series of experiments an abundance of this factor, was added in the alcoholic extract of wheat embryo.

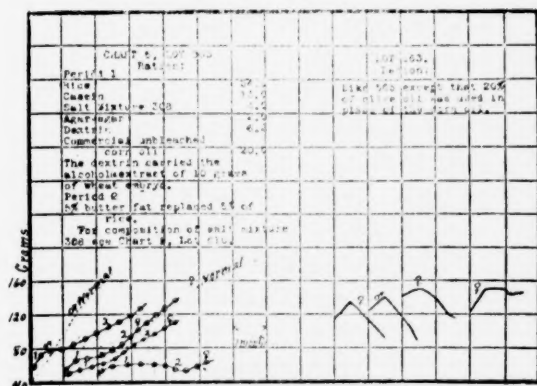


Chart 5. Lot 565. The rats in this group received 20 per cent of commercial unbleached corn oil. Even this amount does not suffice to furnish an adequate amount of the fat soluble A to induce growth.

Lot 563. In 1913 it was first shown in a paper from this laboratory that butter fat possessed a certain growth promoting property and that olive oil did not, (1) We later learned that the success of these early experiments turned upon the degree of purity of the lactose contained in the rations. The two dietary essentials, the fat soluble A and the water soluble B, at that time unappreciated, were carried by the lactose as impurities and were present in minimal amounts which could suffice to induce growth. Since pure lactose would cause failure to grow even when butter fat was included in the ration, it seemed desirable to repeat the test on olive oil with the rations known to be wholly adequate with respect to all factors except for the dietary A. The curves shown here confirm our earlier results in indicating the absence of the fat soluble A from olive oil.

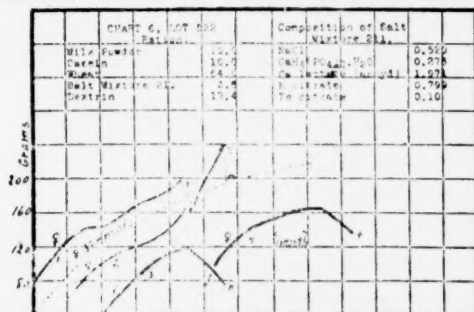


Chart 6. Lot 522, illustrates the curves of growth of

four rats fed a ration which contained barely enough of the fat soluble A to induce growth at the normal rate during a period of three to five months. Number 1 produced two litters of young but did not rear any of them. After the loss of the second litter she did not appear to be in a healthy condition, so she was discarded. Number 2 died just before producing a litter of young. The remaining two suddenly declined and died after having grown fairly well for a time. With butter fat added (5 per cent) this is one of the most successful rations we have employed for inducing repeated reproduction and rearing of the young. (8)

This ration was therefore employed to test the growth promoting values of certain vegetable oils since a relatively small additional content of the fat soluble A should supplement the amount already in the ration and prevent failure. We look upon the experiments with this ration as somewhat more delicate, tests for this dietary factor than were those with the ration described in Chart 1.

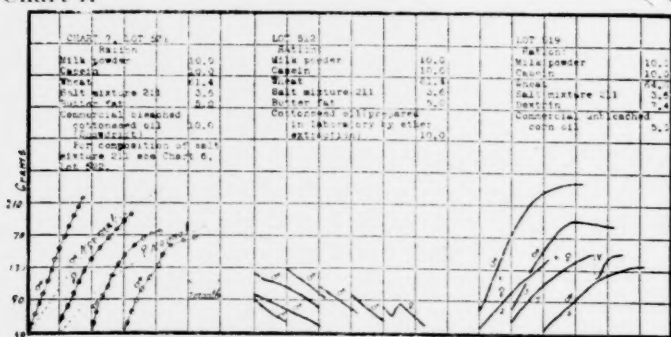


Chart 7. Lot 531. This lot was given the ration described in chart 6 but with the addition of butter fat together with 10 per cent of bleached commercial cotton seed oil to see whether the latter contained enough of a toxic constituent to interfere with growth. There is no evidence that this content of refined cotton seed oil was detrimental. According to the manufacturers the oil was prepared by pressing.

Lot 512, shows the injurious effect of feeding the same ration as was given Lot 531 but employing instead of refined cotton seed oil a preparation made by extracting cotton seed with ether in the laboratory. This result is in harmony with those of Withers and Carruth in showing the extraction of the toxic principle of cotton seed "gossypol" by ethyl ether. (4) (Compare Chart 2, Lot 477.)

Lot 519. Received a ration like that of Chart 6, Lot 522, except that 5 per cent of commercial unbleached corn oil was included instead of its equivalent of dextrin. There was no evidence of improvement as a result of the content of corn oil. Number 2 died in parturition, number 4 produced a litter of young but destroyed them.

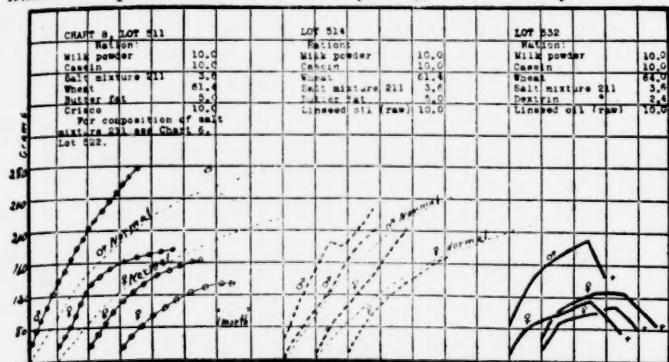


Chart 8. Lot 511. The ration of this lot was like that of Lot 522, Chart 6, but without butter fat added, and with 10 per cent of Crisco replacing an equivalent amount of dextrin. The appearance of these rats was distinctly inferior to that of Lot 522. Apparently the content of butter fat did not suffice to counteract a somewhat deleterious effect of the hydrogenated cotton seed oil. We have fed this food mixture with dextrin replacing the Crisco, and in all cases the animals were extremely sleek and well nourished (8 p. 642). Lot 511 on the other hand suffered from roughness of the skin, tail and ears and appeared to be very poorly nourished.

Lot 514 received a ration like the preceding one but with 10 per cent of raw linseed oil replacing Crisco. There were no definite signs of any ill effects resulting from the consumption of linseed oil. Chart 3 (compare Lot 444.) Linseed oil does cause injury in some degree, however, although its detrimental effects are not visible when the ration contains butter fat. When the butter fat was omitted from this food mixture the depressed growth and early failure of the rats was very pronounced as compared with the behavior of rats fed a similar ration but without the linseed oil. (Compare Lots 532 with 514 and Chart 6, Lot 522.)

Lot 532 shows that 10 per cent of raw linseed oil in this ration exerts a depressing effect on the growth and health of the animals. These rats became very emaciated and suffered from inflammation of the eyes. This

ration with dextrin replacing the linseed oil is that fed to Lot 522, Chart 6. The bad effects of the linseed oil are not visible when the ration is improved by the inclusion of the butter fat as in Lot 514.

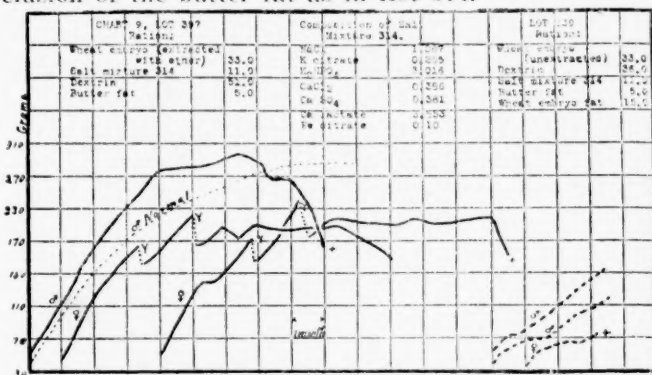


Chart 9. Lot 397 should be compared with Lot 639 whose rations were identical except that the wheat embryo in the latter was not extracted with ether and 15 per cent of the ether extract of wheat embryo was added instead of an equivalent amount of dextrin. Without the wheat embryo fats, growth progressed at the maximum possible rate. With these fats present growth was depressed to half the normal rate or less. The wheat embryo fats are distinctly toxic to animals, but this property will not be evident when fed with a highly satisfactory diet, except possibly through the accumulative effect over a long period.

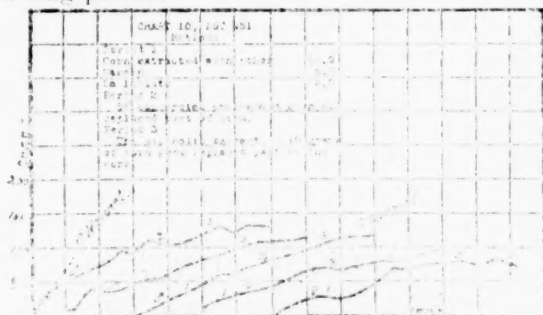


Chart 10. Lot 451, shows the property of ether extracted ground maize kernel, of promoting growth at a slow rate over a prolonged period. This, the ether extracted oil of corn, will not do. It should be noted that the inclusion of corn oil in period 2 or the alcoholic extract of corn grain in period 3 did not produce any

change in the direction of the curve of growth. The fat soluble A is present in the corn kernel but in amount below the optimum for growth, and the substance is not extracted by ether.

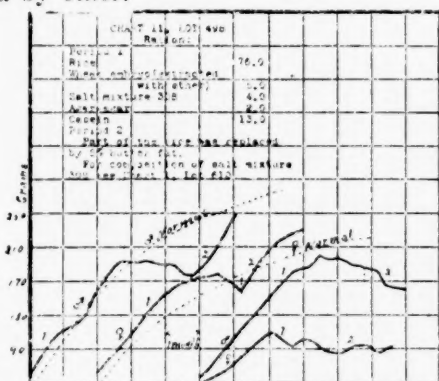


Chart 11. Lot 498. In this ration the only source of the fat soluble A was 5 per cent of completely ether extracted wheat embryo contained in the ration (period 1). During three months growth was normal but early failure ensued. That the shortage of the fat soluble A was the only factor responsible is shown by the prompt response of the two rats with growth when in period 2, 5 per cent of butter fat replaced 5 per cent of rice. There is no doubt but that this dietary factor is present in plant tissues but it seems unlikely that any isolated plant oil will contain it.

On cross-examination the witness testified that he is also the author of the article appearing in Volume 23 of the *Journal of Biological Chemistry* entitled "The Cause of the Loss of Nutritive Efficiency of Heated Milk," said article appearing upon pages 247 to 254.

Arthur G. Helmick,

called as a witness on behalf of the defendants, being duly sworn, testified that he resides at 78 South Fifth street, Columbus, Ohio, and has been a practicing physician for fifteen years, nine years in Columbus and the rest of the time spent in hospitals; that he received his medical education at the Starling Medical College; that he worked at the Boston Children's Hospital in Boston, paying particular attention to diseases of children; that the most important part of this study is feeding and nutrition of children; that he has attempted to keep familiar with the literature along this line; that the best milk for infants is mother's milk, and after that cow's milk; that it is an established fact from observation in

feeding children that all the chemical compositions of cow's milk must be present in proper proportion to give normal growth and development; that one element may be fed in place of another element and the child will seem to develop, but this will continue for only a short period of time because the chemical composition of milk cannot be substituted one in place of another since each has its own particular function, and to produce a normal condition in a child they must be present in their proper proportions; that at the present time there is no known vegetable fat which is adequate as a substitute for milk as an infant food.

Oscar Erf,

called as a witness on behalf of the defendants, being duly sworn, testified that he lives at 157 Twelfth avenue, Columbus, Ohio, and has charge of the Dairy Department of the Ohio State University; that he has held that position for about ten years; that he teaches the general branches of dairying there, the course including the testing of milk from a chemical standpoint and from a bacteriological standpoint; that he graduated from the Ohio State University and has taken some graduate courses at the Illinois University and also at the Ohio State University; that they manufacture evaporated milk at the University; that he is familiar to a certain extent with the history of evaporated or condensed milk; that evaporated and condensed milk would be considered by him as being the same substance; that the condensing of milk is first done by evaporating the water, which is the only process that has ever been used practically. That there is another way, by freezing; that methods of evaporation have not changed since the beginning; that he has no absolute figures of the extent to which evaporated milk is used, but that it is used to a very large extent at the present time for infant feeding and for human consumption in general; that its use is increasing because it is being used to a greater extent for general consumption; that he has tried to keep up as far as he could with the literature on the comparative value of butter fat and other fats; that there is not known to science any vegetable fat which supplies that quality which is found in butter fat for feeding young farm animals; that in the general feeding of young farm animals he had never found anything that was quite equal to pure milk with the butter fat in it; that animals not fed upon this did not look as smooth and healthy from observation; that he has used it in his experiments in the mixing of grain, corn oil, cotton seed oil, but has never used cocoanut oil.

On cross-examination the witness testified that the Ohio Agricultural College advises farmers to feed calves skimmed milk for economic reasons, and also advises them to supply the necessary fat by adding ground oats to the ration for economic reasons; that relatively speaking a ration of skimmed milk plus fat obtained by adding ground oats is a good ration for feeding calves, but is not as good as whole milk; that a human adult's ration is made up of a great many different articles none of which supplies all of the necessary elements of nourishment and growth, but that is not true for infants; that a man could not live on spinach alone, neither could he live on butter fat alone, nor on skimmed milk alone; that sometimes a baby is fed continuously upon condensed milks, although the witness stated that he is not an expert on these questions; that mother's milk would not be a proper ration for an adult; that condensed milk was first manufactured in 1852 and has been gradually growing from that time, and in the last couple of years has grown immensely; that whole milk subjected to a long, continued process of heating, would result in destroying the elements of growth in it, but that in a special process of heating by which it is subjected to a high temperature for a slight length of time elements of growth would not be destroyed, but they would be impaired to a limited extent only; that condensed milk and evaporated milk are sterilized at high temperatures; that there are different ways of sterilizing; that if they are subjected to heat for a long time then the vitamins are destroyed, but if subjected to heat at short intervals, which ordinarily is the case in the manufacture of condensed or evaporated milk, they are not destroyed; that by high temperature he means a temperature above the boiling point such as 200, 230 or 240 degrees; that there are various ways of supplying the temperature in manufacturing condensed or evaporated milk; that it may be subjected to a low temperature of 120 to 130 degrees for fifteen or twenty minutes, or 150 degrees for a short time, the method employed being dependent to a great extent upon the bacterial flora that is in the milk which has to be constantly observed; that the subjection of milk to a temperature of 230 degrees Fahrenheit for half an hour would destroy these elements of growth; that this last named method is not always employed in the manufacture of condensed milk, although it is employed once in a great while—because, if it is subjected to that long temperature it becomes brown and quite unsalable.

The witness further testified that he has no connection with the Ohio Creamery Association of Creamery Owners and Managers; that he is secretary of the Ohio State Dairyman's Association, which is a popular general organization; that as secretary of this organization he gets his instructions from the directors and also from the grange, which represents seventy thousand people, farmers in the State of Ohio producing milk products, and that the Grange instructed the witness to appear and give testimony in this case; that he gets no salary from these organizations; that he was interested in opposing the Oleo Legislation coming up at the session of Congress in 1915 and was in Washington before the Committee in their hearing; that he went there under instructions; that he has never been registered as a lobbyist; that whenever he is instructed to do so he takes a leading part in any fight in the Ohio Legislature against any competitor with milk or butter; that he appears before Legislative Committee only for the good of the public; that he has never made an argument before legislative committees to directly increase the price of butter or dairy products maliciously to the public; that he has always tried to conserve the public interests because he has no other interests at heart; that he has no private connection with the dairy interests and that the dairy interests have never paid him; that on his trips to Washington his expenses are paid by the Dairyman's Association and by the Grange.

The witness further testified that it is a very common practice among farmers to feed skimmed milk to pigs, because it is a good food and because there would be no profit in feeding whole milk with the butter fat in it; that skimmed milk does cause growth, but relatively speaking it has a much lower growing quality than whole milk; that while it is important to a farmer to fatten his hogs he nevertheless feeds them skimmed milk because of the difference in profits of the feed; that he would not say that skimmed milk does not cause the development of fat in the hog, but on the contrary he will say that it does cause such development, because some of the proteins in the skimmed milk are turned into fat and proteins. That farmers in order to fatten hogs for the market give them skimmed milk, and one hundred pounds of skimmed milk will make about four pounds of gain; that the Agricultural Department of Ohio State University recommends that in some cases young pigs of the age of one month be taken from the mother and put

on a diet of skimmed milk so that two litters of pigs may be raised during one year.

Dr. John A. Wesener, recalled by defendants for further cross-examination, testified that according to his memory the United States Government issued several circulars dealing with condensed milk, and in the earlier circulars condensed milk was defined as being milk to which sugar was added; that at the discussion preceding the issuance of these bulletins the witness was present and took part; that this may have been changed in the last circular known as Circular No. 19, but according to the witness' recollection circular No. 19 defined condensed milk as the sweetened product, and the evaporated milk as the unsweetened product.

Thereupon counsel for defendants offered in evidence Bulletin No. 158 issued by the U. S. Department of Agriculture. Thereupon plaintiffs by their counsel objected to the said bulletin being received in evidence because it does not bear on this case, although consenting that said bulletin might be received for the sole purpose of effecting the creditability of the witness. But the court ruled that said document might be received in evidence subject to plaintiffs' objection as aforesaid. The said document was thereupon received in evidence marked Defendants' Exhibit "D.. and is in the words and figures following, to wit:

"Defendants' Exhibit D."

F. I. D. 158.

Issued April 2, 1915.

United States Department of Agriculture,  
Office of the Secretary.  
Washington, D. C.

Food Inspection Decision 158.

Condensed Milk, Evaporated Milk, Concentrated Milk.

The Joint Committee on Definitions and Standards of the American Association of Dairy, Food, and Drug Officials, the Association of Official Agricultural Chemists, and the United States Department of Agriculture, on November 20, 1914, adopted the following definition and standard for condensed milk, evaporated milk, concentrated milk:

Condensed milk, evaporated milk, concentrated milk, is the product resulting from the evaporation of a considerable portion of the water from the whole, fresh, clean, lacteal secretion obtained by the complete milking of one or more healthy cows, properly fed and kept, excluding that obtained within fifteen days before and ten days after calving, and contains, all tolerances being

allowed for, not less than twenty-five and five-tenths per cent (25.5%) of total solids and not less than seven and eight-tenths per cent (7.8%) of milk fat.

The foregoing definition is adopted as a guide for the officials of this department in enforcing the Food and Drugs Act, and Food Inspection Decision No. 131 is revoked.

D. F. Houston,  
Secretary of Agriculture.

Washington, D. C., March 26, 1915.  
87652°-15.

Washington: Government Printing Office: 1915.

L. P. Bailey,

called as a witness on behalf of the defendants, being duly sworn, testified that he resides at Barnesville, Ohio; that he has been a farmer for sixty-five years; that he is really a live stock farmer and has had some experience in feeding.

Thereupon counsel for defendants asked the witness the following question:

Q. You may tell the court whether in the course of your experience and experiments you have found any adequate substitute for milk as a food for growing animals?

Plaintiffs by their counsel objected to the above question because it does not appear what experiments the witness has made; but the court ruled that the question should be answered by the witness subject to the objection of plaintiffs, to which ruling of the court plaintiffs by their counsel then and there duly excepted.

Thereupon the witness in answer to the above question testified:

That he has had quite a great deal of experience in feeding calves with skimmed milk and whole milk also; that his universal practice is if he wants to raise a good calf, to give it the mother's milk or let it run with the cow; that because he has dairy cows he milks the cows and feeds the calves three weeks with the whole milk and then reduces the whole milk somewhat with skimmed milk or water and when they are three weeks old a little hay, and corn, and oats is added and the calves eat that and digest it readily; that he could not make a good calf unless he fed whole milk for about three weeks; that he has tried substitutes and a good many different calf foods and preparations made as substitutes for milk, but has discarded all of them because they throw the digestion out of order in a young calf.

On cross-examination the witness testified that in ap-

pearing at the trial he represents the Ohio State Dairyman's Association in the capacity of President; that he is interested in this trial as President of the Ohio Dairyman's Association and as representing the dairy interests in Ohio; that he certainly wants to keep this product (Hebe) out of the State of Ohio.

The witness further testified that skimmed milk is all right for growing pigs but not as an exclusive feed, is not good for fattening pigs if used by itself; that it is necessary to add meal or middlings or bran with the skimmed milk in order to get results; that commercial bran has fat in it; that while it may be possible to fatten a hog by feeding it whole milk all the time, the witness does not think it would be advisable to feed whole milk after the hog reached one hundred pounds in weight, because they then need some grain.

Thereupon defendants rested their case.

Dr. John A. Wesener,

called as a witness in rebuttal on behalf of plaintiffs, being duly sworn, testified that he has made a great many experiments such as those already testified to by Professor Hutchinson; that he has made such tests in a great many laboratories, including the laboratories of the University of Michigan, the Chicago University, and others; that the usual method of making such a test is to choose the right animals and where milk or a compound of milk is to be fed the witness stated that he would not select white rats, because a white rat is always filed with diseases of different kinds, especially parasites; that there is hardly a white rat that a parasite cannot be found in the internal organs if a careful post-mortem is made; that white rats also have an infectious pneumonia and die very rapidly from it, and they have other diseases; that if witness were making an experiment with milk or a compound of milk, he would rather select kittens, because milk is the natural food of kittens and they are very hardy animals, and therefore a litter could be obtained and divided so as to have one-half on the experimental lot of food, and the other half on the control; that possibly one hundred or two hundred animals should be used, and even then sufficient proof might not be arrived at to warrant the making of a positive statement as to the result obtained from that number of tests; that if white rats are chosen, however, they should be first selected from the same litter, and this litter should be divided into two lots, one for the regular milk and the other for the Hebe milk; that before starting such an experiment the animals should have been kept on their normal diet as nearly as possible for a

period of a week or two weeks for observation and to see whether there was developed any rat disease common to the white rat, and if so those animals should have been eliminated and in this way would have been avoided as much as possible those errors which later crept into the experiments, say three or five weeks or several months later; that every animal that died in any experiment of this kind should have had a post-mortem performed on it to find out the cause of death, because the animals might have developed pneumonia or might have had these parasites; that it is the witness' understanding that most of the white rats in Professor Hutchinson's experiment already had parasites; that a parasite is not a bacteria, the former being an animal organism that lives; that another criticism which the witness would offer to the experiment of Professor Hutchinson is the filthy condition of the pans in which food was put to feed these rats, being only cleaned once in four days, and milk put in these pans in liquid form quickly deteriorates when exposed to the air, and it is known that milk when infected with certain bacteria will produce violent poison; that this has happened where ice cream has poisoned picnic parties, etc., and this subject was discussed by Dr. Bowen of the University of Michigan; that all of these elements must be eliminated in making these animal tests, otherwise they are of absolutely no value at all.

#### Complainants' Exhibits

The complainants during the course of the above hearing introduced in evidence the following exhibits, and said exhibits were received in evidence and marked as follows:

Exhibit No. 1. Consists of a bottle of Whole Milk, which exhibit is filed herewith and made a part hereof.

Exhibit No. 2. Consists of a bottle of Skimmed Milk, which exhibit is filed herewith and made a part hereof.

Exhibit No. 3. Consists of a package of Whole Milk Creamery Butter, which exhibit is filed herewith and made a part hereof.

Exhibit No. 4. Consists of a bottle of Cocoanut Oil, which exhibit is filed herewith and made a part hereof.

Exhibit No. 4½. Consists of a Can of "Hebe", which exhibit is filed herewith and made a part hereof.

Exhibit No. 5. Is a copy of the label used on Hebe and is the same as the Hebe label set out in the bill of complaint.

Exhibit No. 6. Was one of the former labels used on "Hebe" in Ohio, and is in the words and figures following, to wit:

Net Contents 1 lb. Avoirdupois

Hebe

A Compound of

Evaporated Skimmed Milk

and Vegetable Fat

Contains 6% Vegetable Fat,

24% Total Solids.

Manufactured at Jefferson, Wis.

The Hebe Company

General Offices: Seattle, Wash.

Patent  
Applied  
For

For Coffee and  
For Baking and  
Cooking

Net Contents 1 lb. Avoirdupois

Hebe

A Compound of

Evaporated Skimmed Milk

and Vegetable Fat

Contains 6% Vegetable Fat,

24% Total Solids.

Manufactured at Jefferson, Wis.

The Hebe Company

General Offices: Seattle, Wash.

You'll  
Like Hebe  
Better than  
Milk

Tall Size  
48 Cans  
per Case

Exhibit No. 7. Is Bulletin No. 505 of the United States Department of Agriculture, dated Feb. 13, 1917, the material part whereof is in the words and figures following, to wit: Being pages 1, and 10-13 hereto attached.

### Introduction

"Studies of the digestibility of some common animal fats, including lard, beef fat, and butter, have been reported in a previous paper of this series. The results of these experiments showed that all the animal fats investigated were satisfactorily digested and are suitable for use in quantity as food.

The available supply of animal fats, however, is now little if any in excess of the demand, and it is likely that the supply of such fats for culinary purposes in the future will be even less adequate than at the present time. It is probable, therefore, that in the future greater reliance must be placed on the vegetable fats to supplement the available animal-fat supply. The experiments reported in this bulletin, showing the thoroughness of digestion of certain vegetable oils and indicating in a general way their suitability for food, have an important bearing on this question. The fats studied included olive oil, cottonseed oil, peanut oil, cocoanut oil, sesame oil, and cocoa butter.

Experiment No.	Subject.	Protein.	Fat.	Carbo-hydrates.	Ash.
		<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
30	J. N. F.	69.2	97.5	96.8	55.2
31	W. E. L.	73.9	97.6	98.4	69.4
32	W. A. D.	81.4	96.1	96.3	52.4
36	J. N. F.	77.2	93.7	96.0	52.4
37	J. V. C.	76.2	95.3	96.7	44.6
	Average	75.6	96.0	96.8	54.8

Approximately 98 grams of peanut oil or 97 per cent of the total amount of fat in this diet was eaten per subject per day, and as the coefficient of availability, 96 per cent, implies, the fat was very completely assimilated. This value is increased somewhat by correcting for metabolic products, from which it is calculated that peanut oil is 98.3 per cent digested.

The protein and carbohydrate in the ration were also well utilized, for by way of comparison it has been found that in the total food of the ordinary mixed diet 92 per cent of the protein, 95 per cent of the fat, and 97 per cent of the carbohydrate are retained by the body.

As the subjects reported no unusual effects as a result of eating this diet, and as no laxative effect was observed, it is apparent that peanut oil of good quality is a

useful food, which can be eaten in the same quantities and can be as thoroughly digested as those fats and oils at present most commonly used in the diet.

#### Cocoanut Oil

Cocoanut oil is obtained from the fruit of the palm *Cocos nucifera*. In recent years it has become rather widely known and is assuming considerable importance as a culinary and table fat. It is used in the commercial baking trade more commonly than it is for household purposes and to some extent in the preparation of butter substitutes.

The digestibility of cocoanut oil has not been extensively studied. Bourot and Jean carried on a series of experiments with subjects who received foods prepared first with natural butter and then with cocoanut butter. They concluded that the vegetable product was somewhat more thoroughly assimilated than was butter, the former being 98 per cent and the latter 96 per cent digested.

In a series of tests of 28 days' duration, divided into a fore period of 7 days, a 14-day experimental period, and an after period of 7 days, Von Gerlach found that purified cocoanut oil, called "sanella," and true butter were both 97 per cent digested.

Luhrig reports a similar study in which different amounts of so-called cocoanut butter designed for use as a butter substitute were eaten in a simple mixed diet. In one of the tests 136 grams of the fat was consumed daily for three days, and in the second 90 grams per day for the same length of time. In the first test the fat was 97 per cent available and in the second, 96 per cent was assimilated.

Seven experiments are reported in this paper to compare the digestibility of cocoanut oil with that of other edible fats, and four experienced subjects assisted in the work. Under conditions customary in these tests, the data have been collected and are summarized in the following tables:

## Data of Digestion Experiments With Coconut Oil in a Simple Mixed Diet.

	Weight.	Water.	Protein.	Fat.	Carbo- hydrates	Ash.
Experiment No. 175, subject D.G.G.	<i>Grams.</i>	<i>Grams.</i>	<i>Grams.</i>	<i>Grams.</i>	<i>Grams.</i>	<i>Grams.</i>
Blancmange containing coconut oil	1,057 0	498 6	19 8	108 9	424 1	5 6
Wheat biscuit	656 0	59 1	69 5	9 8	507 1	10 5
Fruit	660 0	573 5	5 3	1 3	76 6	3 3
Sugar	125 0				125 0	
Total food consumed	2,498 0	1,131 2	94 6	120 0	1,132 8	19 4
Feces	98 0		28 4	8 5	52 4	8 7
Amount utilized			66 2	111 5	1,080 4	10 7
Per cent utilized			70 0	92 9	95 4	55 2
Experiment No. 176, subject R.L.S.						
Blancmange containing coconut oil	1,518 0	716 0	28 5	156 4	609 1	8 0
Wheat biscuit	293 0	26 4	31 0	4 4	226 5	4 7
Fruit	1,335 0	1,160 1	10 7	2 7	154 8	6 7
Sugar	127 0				127 0	
Total food consumed	3,273 0	1,902 5	70 2	163 5	1,117 4	19 4
Feces	79 0		26 3	13 5	30 5	8 7
Amount utilized			43 9	150 0	1,086 9	10 7
Per cent utilized			62 5	91 7	97 3	55 2
Experiment No. 177, subject O.E.S.						
Blancmange containing coconut oil	1,741 0	821 2	32 7	179 3	698 6	9 2
Wheat biscuit	98 0	8 8	10 4	1 5	75 7	1 6
Fruit	1,398 9	1,214 9	11 2	2 8	162 1	7 0
Sugar	37 0				37 0	
Total food consumed	3,274 0	2,044 9	54 3	183 6	973 4	17 8
Feces	77 0		25 0	8 3	36 6	7 1
Amount utilized			29 3	175 3	936 8	10 7
Per cent utilized			54 0	95 5	96 2	60 1
Experiment No. 178, subject R.F.T.						
Blancmange containing coconut oil	1,460 0	688 7	27 4	150 4	585 8	7 7
Wheat biscuit	74 0	6 7	7 8	1 1	57 2	1 2
Fruit	1,317 0	1,144 5	10 5	2 6	152 8	6 6
Sugar	139 0				139 0	
Total food consumed	2,990 0	1,839 9	45 7	154 1	934 8	15 5
Feces	52 0		13 8	7 7	24 8	5 7
Amount utilized			31 9	146 4	910 0	9 8
Per cent utilized			69 8	95 0	97 3	63 2
Experiment No. 199, subject D.G.G.						
Blancmange containing coconut oil	863 0	398 0	16 7	90 9	350 2	6 3
Wheat biscuit	525 0	47 2	55 7	7 9	405 8	8 4
Fruit	396 0	344 1	3 2	0 8	45 9	2 0
Sugar	162 0				162 0	
Total food consumed	1,946 0	790 2	75 6	99 6	963 9	16 7
Feces	94 0		28 8	11 9	44 8	8 5
Amount utilized			46 8	87 7	919 1	8 2
Per cent utilized			61 9	88 1	95 4	49 1

	Weight.	Water.	Protein.	Fat.	Carbo- hydrates	Ash.
<b>Experiment No. 200, subject R. L. S.:</b>	<i>Grams.</i>	<i>Grams.</i>	<i>Grams.</i>	<i>Grams.</i>	<i>Grams.</i>	<i>Grams.</i>
Blancmange containing coconut oil	1,537 0	710 4	29 8	161 9	623 7	11 2
Wheat biscuit	366 0	32 9	38 8	5 5	282 9	5 9
Fruit	401 0	348 5	3 2	0 8	46 5	2 0
Sugar	155 0				155 0	
Total food consumed	2,459 0	1,091 8	71 8	168 2	1,108 1	19 1
Feces	103 0		33 4	15 8	42 2	11 6
Amount utilized			38 4	152 4	1,065 9	7 5
Per cent utilized			53 5	90 6	96 2	39 3
<b>Experiment No. 201, subject O. E. S.:</b>						
Blancmange containing coconut oil	1,811 0	850 9	35 7	193 9	747 1	13 4
Wheat biscuit	186 0	16 7	19 7	2 8	143 8	3 0
Fruit	1,713 0	1,488 6	13 7	3 4	198 7	8 6
Sugar	166 0				166 0	
Total food consumed	3,906 0	2,356 2	69 1	200 1	1,255 6	25 0
Feces	94 0		29 7	11 8	43 1	9 4
Amount utilized			39 4	188 3	1,212 5	15 6
Per cent utilized			57 0	94 1	96 6	62 4
<b>Experiment No. 202, subject R. F. T.:</b>						
Blancmange containing coconut oil	1,247 0	576 4	24 2	131 3	506 0	9 1
Wheat biscuit	62 0	5 6	6 6	0 9	47 9	1 0
Fruit	1,412 0	1,227 0	11 3	2 8	163 8	7 1
Sugar	112 0				112 0	
Total food consumed	2,833 0	1,809 0	42 1	135 0	829 7	17 2
Feces	37 0		10 5	6 1	16 2	4 2
Amount utilized			31 6	128 9	813 5	13 0
Per cent utilized			75 1	95 5	98 0	75 6
<b>Experiment No. 222, subject D. G. L.:</b>						
Blancmange containing coconut oil	1,625 0	744 2	50 5	238 7	600 2	11 4
Wheat biscuit	490 0	44 1	51 9	7 4	378 8	7 8
Fruit	965 0	838 6	7 7	1 9	112 0	4 8
Sugar	210 0				210 0	
Total food consumed	3,290 0	1,626 9	90 1	248 0	1,301 0	24 0
Feces	84 0		25 8	9 5	41 3	7 4
Amount utilized			64 3	238 5	1,259 7	16 6
Per cent utilized			71 4	96 2	96 8	69 2
<b>Experiment No. 223, subject R. L. S.:</b>						
Blancmange containing coconut oil	1,847 0	845 9	34 7	271 3	682 2	12 9
Wheat biscuit	290 0	26 1	30 7	4 4	223 2	4 6
Fruit	1,065 0	925 5	8 5	2 1	123 6	5 3
Sugar	96 0				96 0	
Total food consumed	3,298 0	1,797 5	73 9	277 8	1,126 0	22 8
Feces	93 0		29 0	17 5	35 7	9 8
Amount utilized			44 9	26 30	1,089 3	13 0
Per cent utilized			60 8	93 7	96 7	57 0
<b>Experiment No. 224, subject O. E. S.:</b>						
Blancmange containing coconut oil	2,678 0	1,236 5	50 2	393 4	989 1	18 8
Wheat biscuit	263 0	23 7	27 9	3 9	203 3	1 2
Fruit	1,449 0	1,259 2	11 6	2 9	168 1	7 2
Sugar	196 0				196 0	
Total food consumed	4,586 0	2,509 4	89 7	400 2	1,556 5	30 2
Feces	96 0		26 9	14 9	46 6	7 6
Amount utilized			62 8	385 3	1,509 9	22 6
Per cent utilized			70 0	96 3	97 0	74 8
<b>Experiment No. 225, subject R. F. T.:</b>						
Blancmange containing coconut oil	1,696 0	776 8	31 8	249 1	626 4	11 9
Wheat biscuit	221 0	19 9	23 4	3 3	170 8	3 6
Fruit	1,317 0	1,141 5	10 5	2 6	152 8	6 6
Sugar	130 0				130 0	
Total food consumed	3,364 0	1,941 2	65 7	255 0	1,080 0	22 1
Feces	78 0		20 8	18 7	29 5	9 0
Amount utilized			44 9	236 3	1,050 5	13 1
Per cent utilized			68 3	92 7	97 3	59 3
<b>Average food consumed per subject per day</b>	1,017 7	578 9	23 4	66 8	371 7	6 9

## Summary of Digestion Experiments with Coconut Oil in a Simple Mixed Diet.

Experi- ment No.	Subject.	Protein.	Fat.	Carbo- hydrates.	Ash.
		<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
175	D. G. G.	70.0	92.9	95.4	55.2
176	R. L. S.	62.5	91.7	97.3	55.2
177	O. E. S.	51.0	95.5	96.2	60.1
178	R. F. T.	69.8	95.0	97.3	63.2
199	D. G. G.	61.9	88.1	95.4	49.1
200	R. L. S.	53.5	90.6	96.2	39.3
201	O. E. S.	57.0	91.1	96.6	62.4
202	R. F. T.	75.1	95.5	98.0	75.6
222	D. G. G.	71.4	96.2	96.8	69.2
223	R. L. S.	60.8	93.7	96.7	57.0
224	O. E. S.	70.0	96.3	97.0	74.8
225	R. F. T.	68.3	92.7	97.3	59.3
	Average	64.5	93.5	96.7	60.0

On an average 64.6 grams of coconut oil was eaten daily and was well digested by the four subjects in these experiments, the average coefficient of digestibility being 93.5 per cent. The coefficient of availability is increased to 97.9 per cent by correcting for the metabolic products occurring in conjunction with the unutilized fat in the ether extracts of the feces. In experiment No. 224, with subject O. E. S., a relatively large amount of the fat, 131 grams per day, was even more completely assimilated and, as evidenced by the report, produced no abnormal alimentary symptoms. In fact, no one of the subjects reported any laxative condition.

The protein and carbohydrates were 64.5 per cent and 96.7 per cent available to the body, values which compare favorably with the thoroughness of digestion of these constituents usually found in similar tests. It may be reasonably concluded on the basis of these results that coconut oil is suited to serve satisfactorily for food purposes.

### Sesame Oil

The seeds of the sesame plant (*Sesamum indicum*) yield when subjected to pressure an oil very similar in properties to cottonseed oil. Sesame oil is not produced in the United States for culinary purposes, although it is well known elsewhere and is imported to some extent for use by those who have become accustomed to its use in other countries.

Although tests of its digestibility have not been found on record, it is evident from a knowledge of oriental food habits and diets that sesame oil is well known as a useful food in the far eastern countries. The experiments herein reported were undertaken in order that the comparative results obtained with the vegetable fats might be as comprehensive as possible. The same methods

were employed in these tests as with the other fats, and four subjects took part in the work."

Exhibit No. 8. Is the Monthly Bulletin of the Ohio Agricultural Experiment Station, Vol. 1, December 1916, No. 12, the material part whereof is in the words and figures following, to wit: Being pages 363 to 370 both inclusive.

### Misguided Appetite And The High Cost Of Living

A. E. Perkins

"In the discussion which has been so popular in recent years regarding the high cost of living, much attention has been given to the high and increasing cost of foods. Among the various contributing causes which have been rather thoroughly considered the following are mentioned as being of special significance: the rapid increase in our population, the increased price and lowered fertility of our soil, the lack in many localities of proper shipping and marketing facilities, extortion in various forms practiced by carriers and middlemen, extravagant methods of purchasing and delivering in the towns and cities, an increasing tendency even among farmers themselves to live upon highly advertised package goods to the exclusion of the equally valuable and less expensive bulk or home parparations, the increasing use of the more expensive ready-to-serve preparations even in homes where ample facilities exist and time should willingly be given to perform the service of cooking. The two causes last mentioned above have been treated so far as cereal breakfast foods are concerned in a recent bulletin (No. 168) from the South Dakota Experiment Station. Another important cause which has not been given much attention is taken as the title of this article.

Food requirement.—It may be well to mention at this point that the commonly accepted food requirement of an adult man is slightly more than  $\frac{1}{4}$  pound of protein,  $\frac{1}{2}$  pound of fat and 1.1 pounds of carbohydrates daily, varying with weight, age, individual peculiarity and manner of life. Since the fats and carbohydrates (sugars, starch, etc.) serve the same function in the body and can usually be made to replace each other without serious results, these two classes of foods are usually considered together (1 unit of fat being considered equal to  $2\frac{1}{4}$  units of carbohydrates).

The model daily ration cited above is thus said to contain one part of protein to each 5.6 parts of carbohydrates and fat, and is commonly spoken of as having a nutritive ratio of 1:5.6. The vital and working parts of our bodies consist mostly of protein. For this reason

sufficient protein must be supplied in the food to replace these parts as they wear out, and also to provide for any growth which is to take place. A decided shortage of protein cannot be made up by an excess of the other ingredients, although a shortage of the others can be made up to a limited extent by an excess of protein.

Composition of foods.—The cereal grains, which constitute the bulk of the rations of most people in the form of the various kinds of bread, pastry, breakfast foods, etc., contain only one part of protein to each 8 or 10 parts of the other ingredients; and aside from nuts, peas and beans most of the other common plant or vegetable foods contain even a much smaller proportion of protein than the cereals. Hence, if a person attempted to make up his diet entirely from the fruits and fresh vegetables, he would need to consume a large excess of carbohydrates and fat, and also a much greater bulk of food than he would relish, in order to get sufficient protein for his needs.

The urchin who, in response to a question from his physiology teacher as to what is a nutritious food, answered "a food what aint got no taste" must have had first-hand experience in confining his diet largely to the cheap and highly nutritious but low-flavored group of foods, such as the cereals, peas and beans. The boy answered more wisely than he knew, however, for the protein as a class when separated from the natural foods by chemical means are nearly devoid of flavor. In the case of most animal foods, such as meat, fish, milk and eggs in their natural conditions, however, the boy's rule would not hold; for, although these foods are most nutritious and contain protein in high excess over the requirements of our bodies, they also possess abundant and pleasing flavors. They are thus seen to be the logical supplements to a vegetable diet to make it fit the needs of the human body. Even with the large portion of the human race which for religious or other reasons abstain from eating meat the use of milk and eggs is common.

Appetite a guide in food selection.—If the use of animal foods in this way were peculiar to the present generation and to civilized countries, one might ascribe such use, at least in part, to the knowledge that these foods provide the extra protein needed in the diet as explained above; but, since almost nothing was known regarding the exact composition of the various foods or regarding the exact food requirements of the human body until the last half-century, we must conclude that

flavor and appetite have been, as they still remain, the chief guides in the selection of these foods by adults as regular constituents of their diet. This is but a single illustration of the many ways in which man's sense of taste undeceived by the sophistications of man himself has guided him in the right way regarding the selection of his food.

#### The Use of Milk and Milk Products.

Because of its liquid condition and pleasing flavor and because it contains all the essential food elements in easily digestible form, milk often becomes the sole food of mankind, as in infancy and serious sickness. Its liquid form also makes it especially suitable as a supplement to the dry cereals and in various ways in cooking and serving other foods. The fact that it does not, like meat, require the sacrifice of life for its production has also helped to make its use well-nigh universal. Under present-day conditions, too, it is by far the cheapest of the animal foods.

Little is known regarding the time or the way in which man first learned to make use of cream and butter. Probably they were at first regarded as salvage products from the more perishable milk. Butter, which has long been regarded as one of the staple food products, is rarely eaten by itself, being used almost exclusively to add flavor to other foods. Thus, while both milk and butter have been prized chiefly for their flavor, butter flavor is not associated in the popular mind with the flavor of the milk from which it is derived, but is usually considered as an entirely separate article. Butter is an undisguised fat, and though it is appetizing one is rarely tempted to overeat of it. It would be difficult to estimate to what extent cream has been used at various times in the remote past as compared with the present, but it is certain that within recent years, since the introduction of the centrifugal separator making possible the separation of cream in an entirely fresh and unfermented condition, the use of sweet cream directly as food has increased many fold. The phenomenal growth of the ice-cream industry, which is directly dependent upon sweet cream and represents only one of the avenues of its increased use, is too well known to need further comment. The flavor of milk is mostly associated with the fat, and when the milk fat is concentrated into the form of cream the flavor, which has always made milk such a popular food, is greatly intensified in the cream; while the skim-milk is left rather low in flavor. The result from a commercial standpoint is that the cream from a given quan-

tity of milk, containing approximately half the total energy value of the milk mostly in form of fat, usually commands as high a price as the original milk would have brought, while the skimmilk, containing the other half of the total value of the original milk in form of protein and milk sugar, is rarely sold at all as a human food, but must be either fed to animals or thrown away.

Comparative food values.—In the accompanying table are shown the food values from two different standpoints of one quart of milk, one quart of skimmilk and one quart of cream, in terms of a number of the more common foods. The figures represent in every case articles of medium quality and are based on the amount of edible food material in one pound of each of the foods as ordinarily purchased. Most of the analyses on which the table is based were originally reported by Atwater and Byrant of the Office of Experiment Stations, U. S. Department of Agriculture. They are quoted by us from Leach, "Food Inspection and Analyses."

The digestibility of the various foods is not considered in this table. Milk is much more digestible than many of the other foods, so that the actual comparative values of milk, skimmilk and cream would in many cases be considerably greater than shown here.

Erroneous idea regarding the value of cream. The popular conception regarding cream (brought about mainly, no doubt, by its flavor, consistency and color) is that it contains in concentrated form most of the valuable food materials originally present in the milk. The corresponding idea regarding skimmilk is that it is little better than water. A study of the accompanying table should serve to show how far these common conceptions are from the truth. While it is true that cream is a highly valuable food—as a dessert it has no superior—yet it is true also that it can no longer, like milk, be regarded as a cheap and staple article of diet, but must be considered as belonging in the fancy or dessert class. We have shown above how man's taste has led him to the wise selection of milk from among other foods as a proper supplement to a vegetable diet. We must now show the same taste or appetite deceived by man's cunning in modifying the natural foods leads him not only to extravagance but to actual injuries to his own body by the selection of improper combinations of foods. When the milk flavor is concentrated and intensified in the cream, it follows logically that the same appetite which led to the selection of milk as a most desirable

Purchased foods of medium grade	Whole milk		Skim milk		30 per cent cream	
	One quart equals		One quart equals		One quart equals	
	in total food or energy value	in protein content	in total food or energy value	in protein content	in total food or energy value	in protein content
	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
Round steak	0.749	.0401	0.398	0.421	3.19	0.285
Rib roast (beef)	.580	.548	.309	.575	2.47	.390
Ham	.434	.429	.231	.450	1.85	.305
Pork sausage	.319	.586	.170	.615	1.36	.417
Chicken	2.240	.600	1.190	.626	9.55	.424
Eggs*	1.090	.640	.581	.672	4.64	.455
Fish (white)	2.060	.719	1.100	.755	8.78	.511
Oysters	15.310	6.400	8.160	6.720	65.20	4.550
Cheese (full cream)	.375	.303	.200	.318	1.59	.215
Butter	.195	9.000	.104	9.400	.83	6.370
Oatmeal	.361	.519	.192	.544	1.54	.369
Cornmeal	.405	.830	.215	.870	1.72	.590
Wheat flour	.406	.687	.216	.721	1.72	.489
Rice (unpolished)	.400	.950	.213	.998	1.70	.676
Peas (dry)	.428	.381	.229	.400	1.83	.271
Beans (dry)	.415	.339	.221	.356	1.76	.241
Bread (white, homemade)	.521	1.050	.334	1.100	2.22	.745
Potatoes	1.420	3.800	.759	3.990	6.65	2.700
Beets	3.860	5.860	2.060	6.150	16.46	4.170
Tomatoes	6.290	8.440	3.350	8.850	26.80	6.440
Lettuce	9.120	8.130	4.860	8.530	38.80	5.870
Apples	3.030	24.700	1.610	25.900	12.70	17.600
Bananas*	3.240	9.600	1.190	10.080	9.53	6.830
Strawberries*	3.870	8.440	2.060	8.850	16.50	6.000
Walnut (California)	.755	1.600	.403	1.630	3.22	1.100
Peanuts (in shell)	.345	.391	.184	.410	1.47	.278

\*A dozen average eggs weigh 1 6 lb.; a dozen bananas, 3 5 to 4 lb.; a quart of strawberries, 17 to 18 oz.

Note—A quart of whole milk weighs 2 15 lb. and contains 3 7 percent fat, 3 6 percent protein and 4 9 percent sugar; a quart of skimmilk weighs 2 16 lb. and contains 0 1 percent fat, 3 7 percent protein and 5 1 percent sugar; a quart of 30 percent cream weighs 2 07 lb. and contains 30 percent fat, 2 6 percent protein and 3 6 percent sugar.

food will almost invariably, unless definite knowledge and rare determination or compelling financial considerations intervene, lead to the selection of cream in preference to milk. Milk with its nutritive ratio of 1:3.8 makes an ideal supplement to a meal composed largely of cereal products, fruits, etc., with their nutritive ratio of 1:8 or higher; the milk will make the diet conform to the needs of our bodies requiring a nutritive ratio of 1:5.6. Cream containing 15 percent butterfat will ordinarily contain about 3.1 percent protein and 4.3 percent sugar; that containing 30 percent butterfat will have about 2.6 percent protein and 3.6 percent sugar. Their nutritive ratios will thus be about 1:12.3 and 1:27.3, respectively. A good grade of table cream will usually fall between these limits.

Let us examine in detail a common breakfast menu: Fruit (food material mostly carbohydrate), cereal and cream (fats and carbohydrates in great excess), buttered toast or rolls (also high in carbohydrate and fat), a sweetened cake or cookie (having a large excess of fats and carbohydrate), coffee with almost no food value in itself but flavored with cream and sugar. The effect of the replacement of milk by cream in a meal of this na-

ture on unbalancing the diet must be apparent to all. The fat requirement of the entire day would likely be exceeded at the breakfast cited above, while not nearly sufficient protein, or tissue building material, would be provided to meet the needs of the body. If the skimmilk with its nutritive ratio of 1:1.4 which nature mixed with the cream, had been left there instead of being removed and fed to pigs or thrown away, the meal cited above would still have been highly palatable and much better suited to the needs of those consuming it. It would also have been much cheaper.

While butterfat is digested and used by our bodies probably more readily than any of the other food fats, it is also well known that large excesses of fats will often produce digestive disturbances; and if the appetite aided and abetted by the latest fads in foods is allowed to play similar tricks on the stomach at the remaining meals of the day, the person or family will have paid an excessive price for food and still have gone ill fed. Digestive disorders of serious nature are sure to follow a continued program of this kind.

Food value of skimmilk.—Let us now consider the subject of the skimmilk which is discarded in the scheme just outlined. With the exception of water and salt man's food is derived entirely from plants, either directly in the form of grains, vegetables and fruits, or indirectly from the bodies, milk or eggs of animals, which in turn depend upon plants for their food. Animals return in the products named only a small part of the food material which must be supplied them in their food. The return in the case of meat-producing animals is from a minimum of 3 or 4 percent to a maximum of about 16 percent, depending upon species, breed, age at slaughter, individuality of the animal, and the efficiency of the ration supplied. Milch cows are the most efficient producers of animal food; yet, even they seldom return more than 25 to 30 percent of the energy value contained in their food.

This apparent great waste is justifiable only on the grounds that most of the food supplied to these animals would not be suitable for human food, while the meat, milk, etc. which they return is, of course, highly desirable for this purpose. Leaving aside the matter of flavor, however, the only advantage of these animal foods over those of vegetable origin lies in the fact that most of them contain large amounts of easily digestible protein. Protein, though it is absolutely essential in our diets, is the least plentiful and most expensive of the

three main classes of food materials; in fact, the greater part of the world's animal industry, with its great waste in energy value as explained just above and its great cost in human labor, is merely a process of protein concentration. Skimmilk of average quality contains about 3.7 percent protein and 5.1 percent milk sugar. Authorities are generally agreed that both these substances as found in skimmilk are at least fully as digestible and useful to our bodies as those obtainable from any other source. Skimmilk, then, aside from being somewhat low in flavor is a most excellent form of human food, containing in large quantity the very substance which when purchased in other foods is the most expensive ingredient of our diet. It will readily be seen what a great economic loss is caused by throwing away or feeding to animals so valuable a food, and one obtained in common with other animal foods at as great a cost; yet, many thousands of gallons suffer this fate daily in Ohio alone.

Repeated experiments have shown that skimmilk is worth from 25 cents to 40 cents per hundredweight to replace other feeds at current prices in rations for meat-producing animals. By combining these figures with those given in the preceding paragraph, it is apparent that skimmilk should be worth from \$2 to \$7 or \$8 per hundredweight in actual food value in the human diet in competition with the meat obtained from these animals. That these figures are not at all too high can readily be seen by comparing the food material contained in the two products by actual analysis, at the price which must be paid for them in the form of meat. Skimmilk, then, at 5 cents or even 10 cents per quart would be an extremely economical food, and having a nutritive ratio of 1:1.4 would constitute the cheapest and one of the best sources of the extra protein needed to balance a vegetable diet. Skimmilk also contains an abundant supply of mineral matter which is often sadly deficient in our diets. While devoid of the high flavor and aroma characteristic of butterfat, skimmilk still possesses a delicate and pleasing flavor due to its milk sugar and is in itself to those whose taste has not been spoiled by highly flavored dainties a palatable as well as a highly nutritious food.

Like loss with other foods.—Similar conditions exist regarding other foods. The most valuable constituents of many of the cereals and garden vegetables are removed in preparing them for use to improve such features as the color, texture or flavor of the product. Meat is not considered desirable unless the animal yielding it

is fat when slaughtered; yet, much of this same fat produced at so high a cost goes into garbage cans instead of into human stomachs.

Many people disdain cereal served with milk and most of the common vegetable foods, and base their diet largely on meat. On the alleged ground that the meat has a more lasting effect in satisfying their hunger than the other foods. Yet, let a piece of the most tempting beef-steak be extracted with water or pressed to obtain broth or meat juice for an invalid, and the solid portion which remains, containing probably more than 95 percent of the real food material present in the original meat, would be spurned by these same people as quickly as skimmilk and for the same reason. The other side of the story as applied to meat is illustrated by the willingness of people to pay from \$2 to \$4 per pound for meat extract, which has repeatedly been shown to consist almost entirely of flavoring material and stimulating salts and to contain but little of the protein substance which gives to meat most of its real food value.

We believe that we have advanced sufficient evidence to show that in many cases people, guided mainly by appetite, think they are buying food with more or less flavor thrown in when they are in reality buying flavor with a little food value incidentally included. In the choice of the natural foods, appetite is usually a fairly reliable guide to the selection of a proper diet, but in these days of sophisticated and modified foods, appetite alone will frequently lead one to spend his living on mere flavored husks; while the real food value of the article shorn of its flavor is allowed to waste. It would be difficult indeed to overestimate the effect of these tendencies on the high cost of living."

Exhibit No. 9. Is Bulletin No. 469 of the United States Department of Agriculture, dated December 15, 1916, the material part whereof is in the words and figures following, to wit:

Being those parts of pages 3, 4, 5, 13, 14, 15, 16, and 17 of exhibit hereto attached which are enclosed in quotation marks.

#### The Place of Fats in the Diet.

"The chief value of fats in nutrition is that they furnish energy which the body requires to perform its work. The ideal diet should contain sufficient quantities of fat and carbohydrates to insure it the required amount of energy, as well as a sufficient quantity of protein to supply the necessary nitrogen for growth and repair of the body, also mineral matter for growth and other body

needs, and vitamins or similar bodies required to render the diet adequate for maintenance. Since fats furnish 2½ times as much energy, pound for pound, as do proteins and carbohydrates (1 pound of fat furnishing about 4,000 calories, and 1 pound of protein or carbohydrate only about 1,800 calories), and since they are both wholesome and palatable, they are very commonly used to increase the energy value of the diet. Furthermore, they are especially useful as a source of energy where an excess of carbohydrates in the diet is to be avoided, as in cases of diabetes or certain forms of indigestion.

The consumption of some fat is apparently universal, although the amount eaten varies within rather wide limits. The diet in the polar regions represents one extreme, fat being used in quantity with meat, which is the chief article of diet. Though it seems to be less well known, it is nevertheless true, that fats are also eaten in considerable quantity in tropical countries, as is evident when one recalls the cocoanut oil of the South Sea Islands and the olive oil and other fats so much used in cookery in other regions characterized by a very warm climate. As everyone knows, dwellers in temperate regions use fat in the diet in many ways, which are determined largely by the prevailing food habits and the kinds of fat procurable, and in quantities which bear a more or less direct relation to the amount of physical work performed. Men engaged in severe work out-of-doors often eat large quantities of fatty foods. Workmen in lumber camps, for instance, relish a diet of pork and beans and other fat foods which would be too hearty for the office worker or clerk. It is difficult to obtain any definite figures for the quantity of fat eaten by the average person, but in 1,300 dietary studies of families, carried out among different races and in different countries, it was found that the average quantity of fat eaten was about 4½ ounces per person per day, the variation recorded being from 1½ to 13 ounces per person per day.

While fats and carbohydrates may replace each other to a considerable extent, recent investigations indicate that some carbohydrate supplied by the food or formed in the body from protein is essential for the combustion of fats in the body. Experts in nutrition and dietetics, therefore, believe that neither one should be used to the exclusion of the other.

#### Digestibility of Fats.

While all fats yield approximately equal amounts of energy when burned outside of the body, the energy which the body actually derives from each is dependent

upon its digestibility; that is, the portion which the body retains. The digestibility of a number of the individual fats has been determined, and the information at present available indicates that fats in general are very thoroughly digested; more so, indeed, than the animal or vegetable proteins and the starch occurring in the ordinary mixed diet. Such slight differences as have been observed in the digestibility of individual fats evidently correspond to differences in their melting points. Available evidence indicates that fats such as mutton fat, having a melting point higher than the body temperature, are less completely assimilated than those melting at a lower temperature, such as lard, butter, olive oil, and cottonseed oil. Also, it has been shown by feeding experiments with laboratory animals that animal and vegetable stearins (melting above body temperature) are only very slightly assimilated by the body when eaten alone, whereas, if mixed with palmitin and olein digestibility is increased because, no doubt, the mixture has a lower melting point than the stearin by itself.

The digestive disturbances often attributed to eating fat are probably due not so much to the inability of the body to digest the fat itself as to other factors, chief among which are bad cooking, overeating of foods containing fats, and rancidity. Laboratory experiments have shown that under some conditions, when fats are overheated, a chemical compound called acrolein is formed. This substance is especially irritating to the mucous membranes of the eyes, nose, throat, and it is well known to housekeepers that when fats are scorched vapors are given off which cause the eyes to water. If any of these vapors were occluded in the food during frying it seems probable that similar irritation would be produced on the delicate mucous membrane of the digestive tract. Obviously, such digestive disturbances cannot be cited as proofs of an incomplete digestion of fats.

Disagreeable sensations are experienced by some people after eating large quantities of foods such as meats containing much fat interspersed with the muscular tissue, and overrich puddings or salads. This may be explained by the fact that the digestive juices of the stomach have little solvent action on such nonemulsified fats and are thus hindered from digesting the protein which is covered by or very intimately mixed with the fat. The passing of the food through the pylorus into the small intestine is thus delayed until the fat has become separated from the lean portions by the enzymic

and mechanical action of the stomach. For this reason very fat meats, for instance, remain a longer time in the stomach than lean meats, although in the end they are as thoroughly digested. Similar digestive disturbances are sometimes experienced after eating fried foods (cooked without scorching) or foods in which fat is incorporated in such a manner that it prevents the digestive juices from acting upon the protein and carbohydrates. This delayed digestion is often mistaken for diminished or incomplete digestion. Fats which have become rancid, even though the rancidity is not sufficiently marked to influence the flavor very much, may cause digestive disturbances in some people. That this is not always the case is evidenced by the fact that there are some oriental people who eat rancid butter or oils apparently by preference.

It must be remembered that there are some persons whose systems can tolerate little if any food rich in fats. This, like the inability of some to eat strawberries, onions, or other foods, without digestive disturbances, is a matter of individual peculiarity.

#### Cocoanut Oil.

Cocoanut oil is prepared by pressing the dried meat of the cocoanut, which is known in the trade as copra. The crude oil is used for cooking purposes in tropical countries where the oil is prepared. In this condition the fat melts at about 70° F. and is a liquid in summer or in warm rooms during the winter. Refined cocoanut fat has little marked taste or odor if fresh and carefully prepared, and when solid is white in color. It has only recently come into use for culinary purposes but bids fair to become an important cooking fat. There are a number of cocoanut-oil products on the market, but these are not much used for home cooking. They are extensively used in bakeries and similar establishments, one reason being that they can be obtained with a considerable range of hardness, so that they are useful for many special purposes. For instance, one of the cocoanut fats is combined with sugar for use as a filling for some sweet crackers.

#### Corn Oil

Corn oil is prepared from the germ of the corn which is obtained as a by-product in the manufacture of corn-starch and glucose. The germs are ground and subjected to pressure which removes the oil. Some studies have been made of the use of corn oil for shortening purposes. Pastry made with mixtures of lard and corn oil in amounts not exceeding 10 per cent of the latter gave

results identical with those in which lard alone was used. When properly refined, corn oil is a wholesome product and is marked to some extent as a table oil. Large quantities of the crude oil are used for industrial purposes.

#### Miscellaneous Oils

In addition to the above-mentioned vegetable oils there are a number of others, such as soy bean, sunflower, sesame, and colza or rapeseed oils, which may be mentioned here. When carefully prepared these oils are of a yellow color and bland flavor and are used for food purposes in those countries where the particular seeds are obtainable in large quantities and the supply of other edible oils is limited. Walnut and similar nut oils, produced in some countries where the nut crops are large, are of good flavor and find a use for salad purposes.

There is some attempt being made to promote the utilization for table purposes of oils expressed from the kernels of the stones of such fruits as the apricot, peach, and cherry. Inasmuch as these stones are available in quantity as a waste product of the drying and canning of fruits, and the expression and refining of the oil may be done at small cost, they offer an additional source of edible oil.

#### Hardened Vegetable Fats

Hardened vegetable oils, technically known as hydrogenated oils, which have much the same consistency as lard or butter, have been put on the market within recent years. They are commercial possibilities owing to the fact that as a result of a long series of laboratory experiments processes have been discovered by which oils may be transformed into a product of any desired hardness by chemically adding hydrogen to them. This reaction takes place, for instance, when finely divided nickel, hydrogen, and the oil to be hardened are intimately mixed under proper conditions. The nickel does not enter into the composition of the hardened fat, but is removed and used repeatedly in the preparation of other batches. The hardened oils are generally white in color, have no appreciable odor or taste, and are less likely to become rancid than the original oil. A number of these fats, marketed under a variety of trade names, have proved popular and appear to be of quite wide application. This hardening process may also be of special value in the future utilization of some oils like the fish oils, which, because of objectionable flavors and odors, are not entirely suited for edible purposes in their natural state.

### Nut Butters

Closely related to the nut oils mentioned above (see p. 13) are the nut butters prepared by grinding finely the meats of peanuts, almonds, or other nuts rich in fat, so as to produce an oily mass much like butter in consistency. Peanut butter is by far the most common of the nut butters. It is used chiefly as a filling for sandwiches, crackers, etc., though it finds some use in cooking. The nut butters can be made at home by grinding the whole nuts; a special nut-butter knife being furnished with some of the meat or food choppers. In addition to containing a large amount of fat, nut butters also contain considerable protein.

### Avocado

Although its oil is not extracted for food purposes, the avocado, commonly called the alligator pear, a tropical fruit which is becoming better known in some of our markets, contains as high as 20 per cent of fat in the edible portion. When used in the diet this must be taken into consideration as a source of fat.

### "The Selection of Edible Fats

In the selection of edible fats the principal consideration should be the purpose for which the fat is to be used, quality, price, and individual preference, since the energy which the body derives from different fats is about the same, and all are regarded as wholesome when of good quality. Custom, which influences to a considerable extent the choice of all foods, can, therefore, be subordinated to the more essential consideration of economy.

When purchasing fats for table use it should be remembered that they influence the wholesomeness of the foods with which they are served as well as the energy value and cost. The price of table fat depends largely upon their flavor and to a less extent on color, and in selecting them each housekeeper must decide how much she can afford to pay for these properties, since all the edible fats have practically the same energy value. In general it pays always to buy fats of such good quality that none will have to be thrown away through spoilage. In some instances a higher-priced article may be more economical in the end as, for example, clean, sanitary butter, as compared to a cheaper but less sanitary product. In some instances, where taste or flavor only is involved, a less expensive table fat may answer quite satisfactorily the purpose of a more expensive one. For example, the chief use of table oils is as an ingredient of salad dressings, and when a characteristic flavor is not

especially desired, good grades of cottonseed and peanut oils, having a bland flavor, may be used, when these are less expensive than the corresponding grades of olive oil.

Fats used for shortening, influence the appearance, flavor, texture, composition, keeping quality, and cost of the foods in which they are incorporated. In selecting shortening fats flavor and odor are to be considered, but attractive appearance and color are of less importance, since in cooking these are usually masked. Other qualities being equal, those culinary fats are more economical and desirable which possess the best keeping quality; that is, the least tendency to become rancid. Also, for general use shortening fats give the best results if they are neither too hard nor too soft to be easily mixed with the other ingredients of the dough at ordinary temperatures.

Fats used as a medium for cooking should be carefully selected, since they influence the flavor, appearance, and texture of the foods cooked in them, as is evident when one recalls the bad flavor imparted to fried foods by burned or rancid fat. Preference should be given to a fat which does not scorch too readily at the temperature most commonly used for frying. Experiments in the laboratory of the Office of Home Economics indicate that butter and lard scorch at a lower temperature than beef or mutton fats and cottonseed, peanut, or cocoanut oils. For this reason, therefore, the latter fats are preferable for deep frying, which requires high temperature.

Prejudice often exerts an influence on the selection of fats as well as other food materials, and these prejudices are often curious. For example, some persons who think that lard is not only indigestible, but also unwholesome, nevertheless enjoy bacon, which, of course, supplies pork fat in a different form. Such prejudices have little or no basis of fact and should not exert too much influence on the selection of any food material."

Exhibit No. 10, consists of a Can of Carnation Milk, which exhibit is filed herewith and made a part hereof.

Exhibit No. 11 consists of a large fibre shipping case containing cans of Carnation Milk, which exhibit is filed herewith and made a part hereof.

Exhibit No. 12 consists of a large fibre shipping case containing cans of "Hebe," which exhibit is filed herewith and made a part hereof.

Exhibit No. 14 is a paper showing the analysis of "Hebe" and Carnation Milk. (This Exhibit is set out in full in the record in connection with the testimony of Dr. John A. Wesener).

Exhibit No. 15 is a paper showing colored illustrations. (This Exhibit will be found set forth in the record in connection with the testimony of Dr. John A. Wesener).

Exhibit No. 16 is a letter dated July 21, 1916, from the Ohio Attorney General to Dr. C. L. Alsbury, Chief of the Bureau of Chemistry, U. S. Department of Agriculture, Washington, D. C. (This Exhibit is set out in full in the record at the conclusion of the evidence in chief of complainants.)

Exhibit No. 17 is a reply by the U. S. Department of Agriculture, Bureau of Chemistry, to the last mentioned letter (Exhibit No. 16). (Exhibit No. 17 is set out in full in the record at the conclusion of the evidence in chief of complainants.)

#### Defendants' Exhibits

Exhibit "A" consists of copy of specifications for evaporated milk sent to Monypeny-Hammond Co. by the Quartermaster's Department at Camp Willis.

Exhibit "B" is paper designated as Hoard's Dairyman, a weekly Journal devoted to Dairy Farming, dated July 21, 1916.

Exhibit "C" is a paper entitled "The Distribution in Plants of the Fat Soluble A, The Dietary Essential of Butter Fat."

Exhibit "D" is a copy of F. I. D. 158 issued April 2, 1915 by the U. S. Department of Agriculture.

(Defendants Exhibits "A", "B", "C", and "D" are all set out in full in the record in connection with the testimony of various witnesses).

It is hereby stipulated by and between the parties in the above entitled cause by their respective counsel as follows:

1. That the following physical exhibits be certified to the Supreme Court as such, but inasmuch as some of said physical exhibits are of a more or less perishable nature it is understood that appellant for the purpose of the argument in the Supreme Court may have the privilege of substituting fresh exhibits of like kind for any of such exhibits which may have deteriorated or spoiled at the time this case is reached for argument in the Supreme Court:

- Plaintiffs' Exhibit No. 1
- Plaintiffs' Exhibit No. 2
- Plaintiffs' Exhibit No. 3
- Plaintiffs' Exhibit No. 4
- Plaintiffs' Exhibit No. 4 $\frac{1}{2}$
- Plaintiffs' Exhibit No. 10
- Plaintiffs' Exhibit No. 11

## Plaintiffs' Exhibit No. 12

2. That the following exhibits need not be printed, but may be certified as physical exhibits, and that only the extracts from said exhibits actually offered in evidence on the trial be printed as part of the printed record in the Supreme Court:

Plaintiffs' Exhibit No. 7

Plaintiffs' Exhibit No. 8

Plaintiffs' Exhibit No. 9

Plaintiffs' Exhibit No. 13

Defendants' Exhibit B

Defendants' Exhibit C.

A. T. Seymour,  
of Counsel for Plaintiffs.

L. D. Johnson,  
Counsel for Defendants.

The above and foregoing is all the evidence which is offered or introduced on the trial of the above entitled cause.

And, inasmuch as the matters above set forth do not fully appear of record in this suit, the plaintiffs tendered this statement of evidence and lodged the same in the Clerk's Office for examination on the 19th day of July, 1918, naming the 2nd day of August, 1918, when they would ask the court to approve said statement. Thereupon came the defendants by their solicitor and approved said statement of evidence, which approval is as follows, to wit:

"Columbus, Ohio, July 31, 1918.

On behalf of each of the defendants, we hereby acknowledge notice of the lodgment of the statement of evidence in the Clerk's Office of the District Court of the United States, Southern District of Ohio, Eastern Division, and of the time when plaintiffs will ask the court to approve said statement, and hereby consent that same may be approved.

L. D. Johnson,  
Special Counsel for State of Ohio.  
Solicitor for Defendants."

Thereupon said statement of evidence was presented to Honorable Howard C. Hollister, Judge of the District Court of the United States for the Southern District of Ohio, and it is found by said Judge to be true, complete and properly prepared, and is by said Judge approved and made a part of the record in said cause, and it is cer-

tified accordingly under the hand and seal of said Judge of this court this 1st day of August, A. D. 1918.

Hollister,  
Judge of the District Court of the United  
States for the Southern District of Ohio.

**CLERK'S CERTIFICATE.**

The United States of America, Southern District of Ohio,  
Eastern Division, ss.:

I, B. E. Dille, clerk of the District Court of  
the United States of America, within and for the divi-  
sion and district aforesaid, do hereby certify that the  
foregoing is a true and complete transcript of the pro-  
ceedings had by and before said court in the above en-  
titled cause, as the same appears of record and on file  
in the clerk's office of said court.

In witness whereof, I have hereunto set my hand and  
affixed the seal of said court at the city of Columbus,

Ohio, this 7<sup>th</sup> day of September, 1918.

B. E. Dille, Clerk;

By E. J. White Jr., Deputy.